TÜV NORD
STRASSENVERKEHR

Motor Vehicle System
and
Traffic Routing Technique
Test Laboratory Motor Vehicle Engineering

Study on

Anti Tampering Devices relating to Two or Three Wheeled Motor Vehicles

by order of the Commission of the European Communities
Contract No. FIF. 20020691

- Final Report -

Hannover, December the 18th, 2003

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STRASSENVERKEHR

Motor Vehicle System and Traffic Routing Technique

Test Laboratory Motor Vehicle Engineering

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Deutscher Akkreditierungs Rat

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1 Background and scope of work

The EC legislative type-approval framework, established by Directive 92/61/EEC (motorcycles), provides for the type-approval of whole vehicles or components, technical systems and units. The framework directive 92/61/EEC and the series of separate directives subsequently enacted there-under, establishes the various construction, design and performance requirements which need to be fulfilled before new; two-or three-wheeled motor vehicles can be type-approved. Type-approval constitutes a fundamental pre-requisite of vehicle sale, registration or it's entry into service.

The type-approval requirements relating to anti-tampering measures are laid down in Chapter 7 of Directive 97/24/EC of the European Parliament and of the Council of 17 June 1997 on certain components and characteristics of two- or three-wheel motor vehicles.

Furthermore Article 2 of Directive 97/24/EC stipulates that the Commission shall carry out a detailed study in order to ascertain whether or not the anti-tampering measures in force can be considered appropriate, inadequate or too extreme in the light of intended aims.

The Commission of the EU wishes to ensure that the current legislation in relation to anti-tampering measures, responds effectively to the requirements of the interested parties. The Commission considers that interested parties can be presumed to include:

- vehicle and component manufacturers (including their representative organisations);
- national type-approval authorities that certify the acceptability of products before they are sold on the open market and officially registered;
- national transport/highway authorities responsible for vehicle inspection and thereby ensuring proper compliance with in-use conformity rules;
- vehicle purchasers who require the product to fulfil their legitimate expectations in terms of quality, performance and safety;
- other road users who expect that products used on the road respond properly to safety and environmental requirements;
- the general public and organisations representing the public interests of environmental protection and road safety.

Commission services wish to examine the relevance and effectiveness of the separate directives presently regulating the design, performance, construction and fitting of anti-tampering measures. This examination is required in order to assess the precise scope and natures of on-going technological advance, and to ensure that any future regulatory changes take due account of the paramount need for safety for vehicle occupants and other road users.

This results in the range of the project, focusing generally on three areas:

- Review of the role and function of anti-tampering devices on two- or three-wheeled motor vehicles
- The effective contribution made by anti-tampering measures in terms of speed, noise and gaseous emissions reductions since the multi-directive 97/24/EC came into force
- Recommendations concerning the scope, extent and content of possible amendments to Directive 97/24/EC

The existing type approval directive 92/61/EEC will be cancelled on November 9th, 2003 and replaced by the directive 2002/24/EC of the European parliament and the council, dated March 18th, 2002. The range and definitions of the project concerning Anti-tampering devices, is orientated around this point.

2 Results of the Project

2.0 General

2.0.1 Project handling

The challenge given to us by the European Commission was defined as a project to do justice to the complex task. The following principles were taken into account:

- Nomination of the members of the project team: The team members came from a wide field of expertise (see fig. 2.1). Chosen not just for their relevant qualifications, but also for their many years' experience, and wide knowledge gained from working within the automotive industry. Thereby guaranteeing a successful project outcome. Those qualifications and experience are:
  - Scientific working
  - Specialist knowledge in the field of emission testing
  - Committee work focusing on 2 and 3-wheeled motorised vehicles
  - Experience in type approval of 2 and 3-wheeled motorised vehicles
  - Experience in single vehicle approvals for 2 and 3-wheeled motorised vehicles
  - Organisation of projects
  - Quality-management
  - International work experience
  - Personal contacts to: technical services, approval authorities and manufacturers of vehicles and vehicle parts.

- Assignment of duties: At the beginning of the project-work the duties and jobs of the project members were defined universally.

- Project-Controlling: Continuous monitoring of the budget and assessment of the progress of the project

- Project-Plan: In the beginning, the entire task was divided into single projects. The required effort for each of these single projects was estimated, and all sections of the task were assigned with completion dates. The team members were assigned to single tasks in the regular team meetings. The progress of these tasks was monitored with the help of an ‘open points list’. The project plan was adjusted during the project-work. The final version of the project-plan is attached as appendix A23.

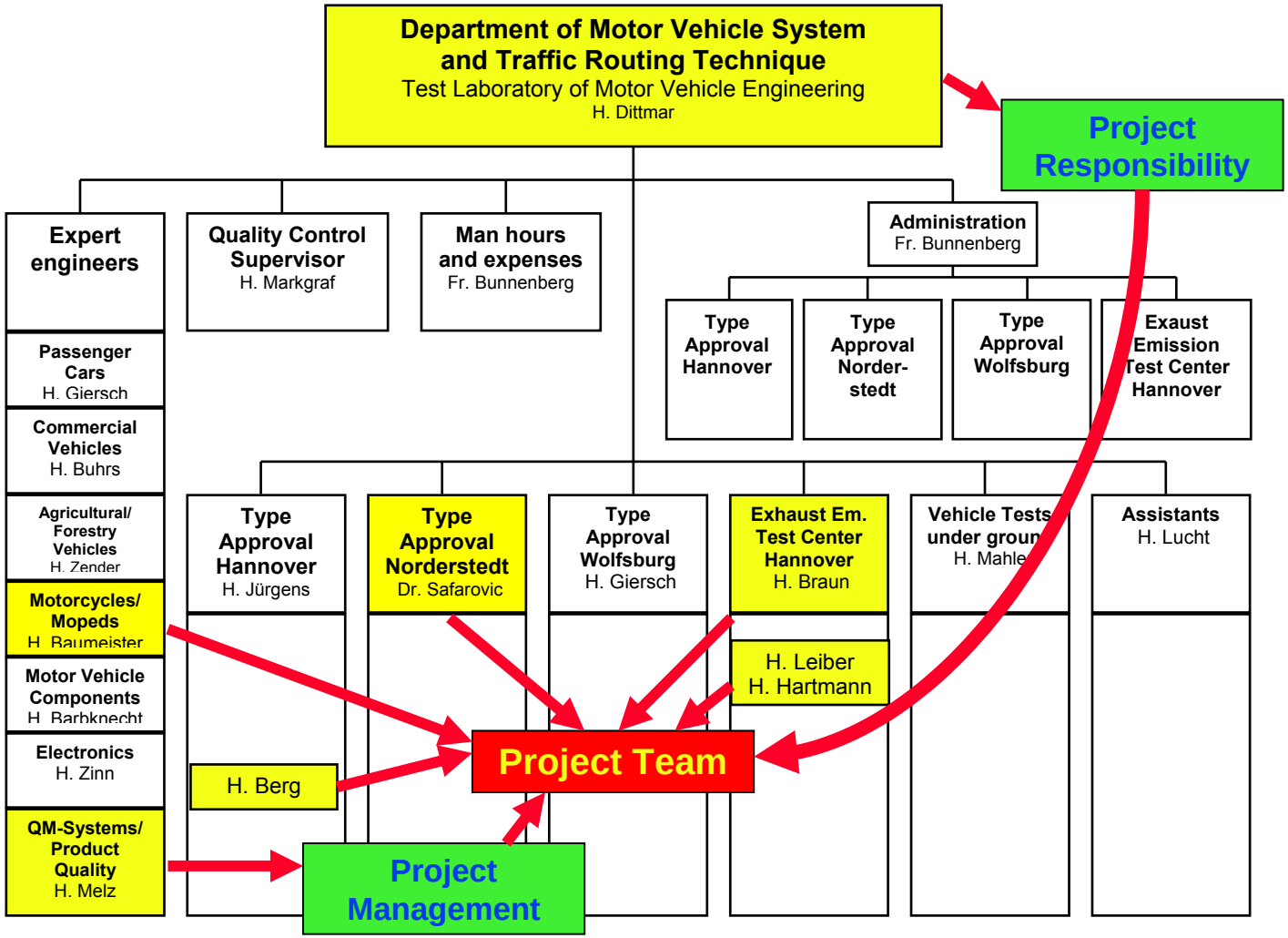


Fig 2.1: Project-team

2.0.2 General remarks about the procurement of information

To cover the single projects

2.1 Review regarding the role and function of anti-tampering devices in two- or three-wheeled motor vehicles

2.2 The effective contribution made by anti-tampering measures in terms of speed, noise and reduction in gaseous emissions since the multi-directive 97/24/EC came into force

extensive comprehensive research was required in order to comprehensively collect the information. Methods applied here were:

- Internet research
- Literature research
- Systematic questionnaires
- Interviews

The focal point for the project-team being systematic questionnaires which were sent out to manufacturers and dealers of tuning parts, regarding systems and measures against tampering (unauthorised manipulation). The questionnaire-forms are attached as appendix A13 (questionnaires to vehicle manufacturers) and appendix A14 (questionnaires to dealers of tuning parts).

Appendix A15 and A16 show examples of the covering letter which accompanied the questionnaire. Appendix A18 and A19 give lists of those dealers and vehicle manufacturers which were approached. To achieve a better return rate, the questionnaires and covering letters were sent both by mail and e-mail. Additionally, the questionnaires were distributed via the contacts we have with the unions of the vehicle manufacturers (such as ACEM, CITA).

Our systematic requests were also aimed at the approval authorities, the laboratories accredited to the European Union, the ministries and the accredited laboratories of the ECE contract parties. The following questions were most interesting:

- Have faults or conspicuous manipulations been found during type approval, during the technical inspections, or at the technical inspection on the road, regarding the manipulation of engine power, top speed, and emissions of noise (for example after market silencers) at 2 and 3 wheeled motor vehicles?
- Can vehicle manufacturers and types of vehicles be named?
- Does supporting documentation (test reports, photos) of these cases exist?

In order to give the contacted offices a better understanding of the case, the questionnaires to the vehicle manufacturers and part dealers were included with the letter.

Similar questions were sent or asked by telephone within the national and international technical inspection services, police offices and further relevant organisations with which we have close contacts. The telephone conversations were conducted by employees who could speak the language of the member state concerned.

The analysis of the expected answers was planned as follows:

1. Listing the data according to:
   - Type approval system (before initial registration)
   - Periodical Technical Inspection
   - On road spot checks
2. Classify vehicle manufacturer and type of the conspicuous vehicles, mark if these vehicles were subject to a type approval according to 97/24/EC
3. Assignment of the manipulations found to the single directives to rate the risk according to the damage to the environment or to the risk for vehicle safety, and other road users.

The analysis of the replies was rather more complicated than expected. The percentage of returned questionnaires was disappointingly small. The anticipated response date was expected to be within 4 weeks of the time the questionnaires were sent out (09. April to 15. May 2003). This seemed, at the time, to allow sufficient time to fill in the questionnaires. However, many companies and institutions did not manage to reply within the given time. A large-scale telephone action was then launched to generate more replies. This resulted in the final analysis not being available within the planned time frame, and the entire project-plan had therefore to be adjusted.

During the project, two interim reports were written and these were accepted by the client. The gathering of information and the data acquisition was completed with the second interim report. Late arriving information was taken into consideration in the final project work.

It was feared that it would prove to be quite difficult to locate and contact a suitable partner within the contacted institutions, with whom to liase regarding the project. Initially the questionnaires were sent to the general address of the different institutions. To ensure that the questionnaires reached the right people within the institutions, the project team did extensive telephone calls, following up the questionnaires. For the most part the questionnaires were reaching the correct departments. We were told however that no statistically relevant data were available to-date which could be applied to the questions important for this study.

The analysis of the data, based on the returns of the systematic questionnaire could therefore not be performed in the way we had planned. This is the reason why the following parts of this report will contain remarks and answers from some member states, which cannot be proven by statistical material. The basis for the analysis and conclusions will be given in the different sections of this study.

2.0.3 Evaluation of statistics to limit the scope of project work

An interpretation of the following statistics was used by the project team to define focal points for this research. Using the available data, the future work will be limited to

- the most important markets for 2 and 3 wheeled motor vehicles in the European Union,
- the most important manufacturers of vehicles and vehicle parts for the European Union (worldwide),
- approval authorities of those states of the European Union, which issued a high percentage of the granted type-approvals for 2 and 3 wheeled motor vehicles.

The questionnaires composed by the project team will be sent to the ministries, approval authorities, technical services / test laboratories, vehicle manufacturers and their unions as given in the appendix.

The focus of the interpretation of the results will lay with the EU-countries, which are at the forefront of production numbers, sales, and, vehicles in service in Europe.

Vehicles in service – total and new registrations

The following graphics [2] gives the reason how this project deals with anti tampering devices. The total number of mopeds and motorcycles in service in Europe has continuously risen to a total of approximately 28 million vehicles in 2002. The higher the number of vehicles, the more important is the social impact on safety and the environment of the categories of vehicles researched in this study.

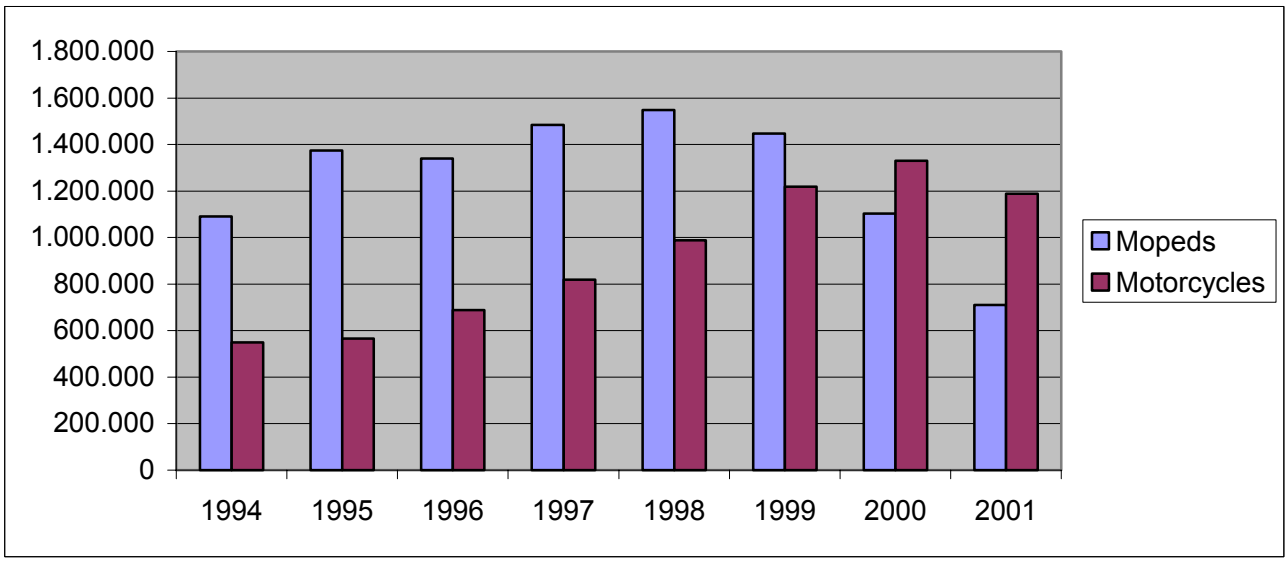


Fig. 2.2 Total Moped and Motorcycle registrations in Europe

Table 2.1 Total Moped and Motorcycle registrations in Europe

	1994	1995	1996	1997	1998	1999	2000	2001
Mopeds	1.090.495	1.374.481	1.339.045	1.483.404	1.548.763	1.446.821	1.103.768	710.193
Motorcycles	549.254	566.531	687.773	818.593	987.645	1.218.833	1.330.641	1.187.897
Total	**1.639.749**	**1.941.012**	**2.026.818**	**2.301.997**	**2.536.408**	**2.665.654**	**2.434.409**	**1.898.090**

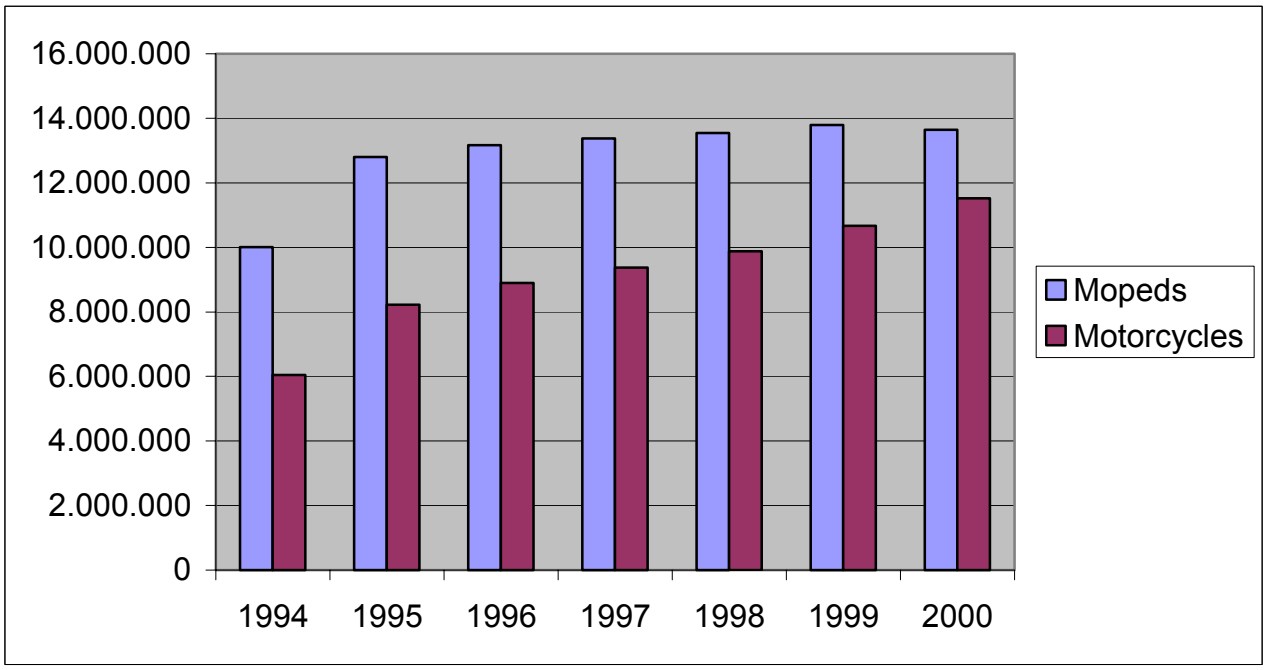


Fig. 2.3 Total Mopeds and Motorcycles in use in Europe

Table 2.2 Total Mopeds and Motorcycles in use in Europe

	1994	1995	1996	1997	1998	1999	2000
Mopeds	10.006.143	12.801.778	13.169.351	13.371.022	13.540.534	13.787.455	13.646.063
Motorcycles	6.039.529	8.227.558	8.896.631	9.372.651	9.876.966	10.665.309	11.521.238
Total	**16.045.672**	**21.029.336**	**22.065.982**	**22.743.673**	**23.417.500**	**24.452.764**	**25.167.301**

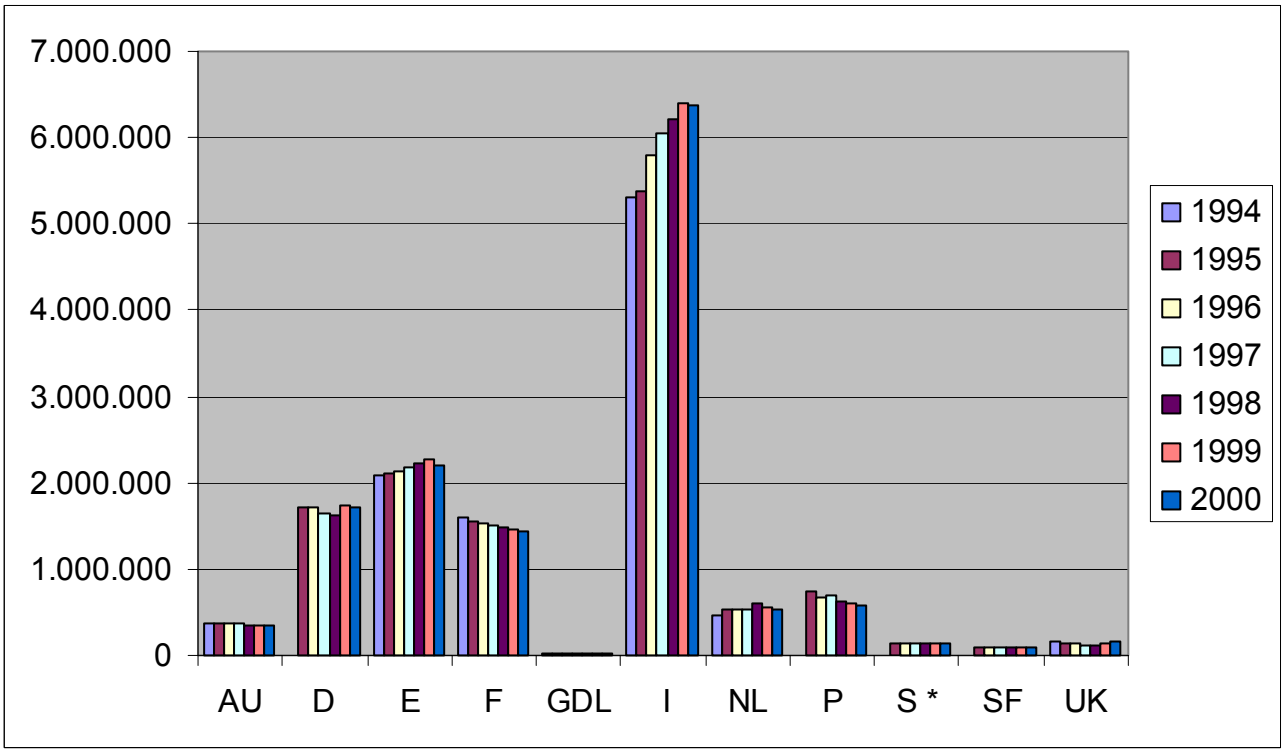


Fig. 2.4 Mopeds in use

Table 2.3 Mopeds in use

	1994	1995	1996	1997	1998	1999	2000
AU	378.028	371.505	366.506	362.953	358.559	351.235	342.557
D	n.a.	1.713.691	1.713.691	1.653.289	1.620.717	1.742.704	1.724.945
E	2.077.500	2.100.785	2.138.265	2.173.990	2.231.897	2.268.344	2.202.521
F	1.608.000	1.562.000	1.540.000	1.518.000	1.482.000	1.461.000	1.442.000
GDL	19.915	20.073	20.185	20.377	20.641	20.938	21.286
I	5.300.000	5.375.000	5.790.000	6.060.000	6.218.000	6.395.000	6.375.000
NL	463.000	540.000	543.000	525.000	600.000	550.000	533.000
P	n.a.	741.300	682.500	689.650	634.000	610.000	590.000
S *	n.a.	141.500	150.000	150.000	150.000	150.000	150.000
SF	n.a.	94.424	96.304	98.063	99.820	102.217	101.734
UK	159.700	141.500	128.900	119.700	124.900	135.967	162.972
Total	**10.006.143**	**12.801.778**	**13.169.351**	**13.371.022**	**13.540.534**	**13.787.455**	**13.646.063**

*: insured vehicles. For total fleet of mopeds 150 000 can be added.

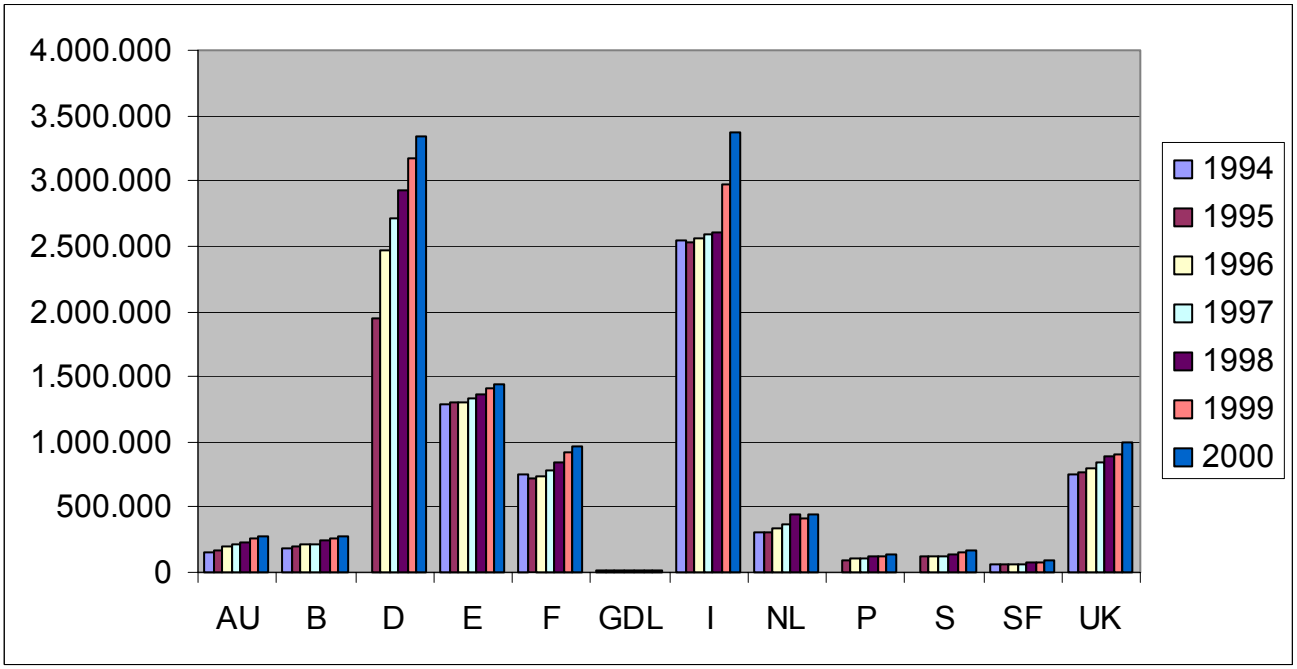


Fig. 2.5 Motorcycles in use

Table 2.4 Motorcycles in use

	1994	1995	1996	1997	1998	1999	2000
AU	154.297	174.907	193.685	212.791	236.314	261.744	278.118
B	185.270	198.470	209.015	221.623	238.053	257.899	276.933
D	n.a.	1.940.988	2.470.451	2.716.780	2.925.843	3.177.437	3.337.848
E	1.287.850	1.301.180	1.308.208	1.326.333	1.361.155	1.403.771	1.445.644
F	744.000	727.000	738.000	780.000	839.000	912.000	968.000
GDL	8.391	8.405	8.716	9.297	9.947	10.819	11.488
I	2.539.835	2.530.750	2.554.672	2.595.551	2.600.000	2.967.968	3.373.064
NL	304.000	307.993	335.000	373.000	451.425	413.989	437.798
P	n.a.	97.200	99.700	103.100	115.000	125.000	144.000
S	n.a.	117.387	121.030	130.041	137.466	149.970	163.346
SF	63.986	64.578	65.954	68.035	72.163	79.601	90.258
UK	751.900	758.700	792.200	836.100	890.600	905.111	994.741
Total	**6.039.529**	**8.227.558**	**8.896.631**	**9.372.651**	**9.876.966**	**10.665.309**	**11.521.238**

Vehicle types approved according to 92/61/EEC in Europe

Up until December 31st, 2002, about 700 different types of motor vehicles were type-approved according to the directive 92/61/EC [1].

The highest number of 175 approvals was granted by the Netherlands, followed by Germany with 151 and Spain with 106 approvals. Italy follows with 77, the United Kingdom with 76 and Luxemburg with 68 approvals, see fig. 2.6.

In Belgium (e6), Finland (e17), Denmark (e18), Portugal (e21) and in Greece (e23), no vehicles were type approved according to the directive 92/61/EC.

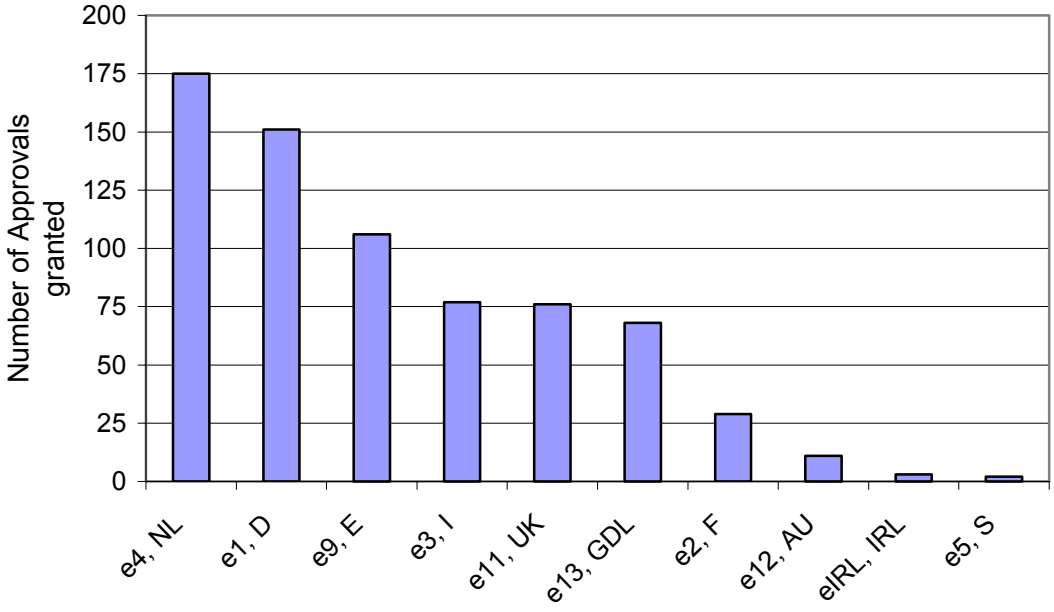


Fig. 2.6 Distribution of approvals granted in the member states

Categorising the approved vehicles according to the directive 2002/24/EC, reveals that a large proportion of the approvals were granted for vehicles of the categories L3e and L1e, these are two wheeled vehicles. The number of approved types for 3 and 4 wheeled vehicles, L2e, L5e, L6e and L7e is much smaller. No vehicle types of the category L4e (motorcycles with side-cars) have been type approved yet.

The different vehicle categories are described in detail in table 2.5 of chapter 2.1.1..1 of this report.

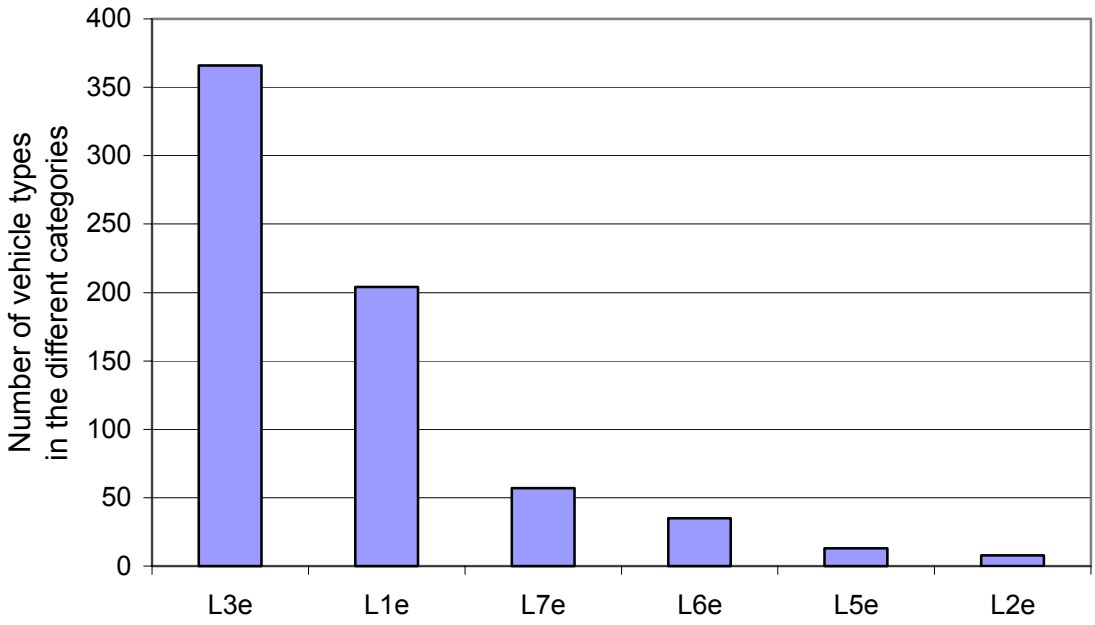


Fig. 2.7 Distribution of approved vehicle types on vehicle categories according to directive 2002/24/EC

According to the directive 97/24/EC chapter 7, 2 wheeled vehicles are categorized in further groups, category A, B, C and D. The measures to be taken against unauthorized manipulation will be different within each of these groups.

This regulation is not applied to 3 and 4 wheeled vehicles, even though these vehicles often use the same drive train, and they fall under equivalent limits for swept volume, power and speed.

Figure 2.8 shows the distribution of the 2 wheeled vehicle types to the different categories. The column for 3 and 4 wheeled vehicles is marked as 'without category'. It is interesting to see that some vehicle types can be categorized – depending on the vehicle version – into the categories B and C or C and D, respectively.

To move from category B to C requires an increased swept volume, the move from category D into C comes with an engine of less power output (different power to weight ratio).

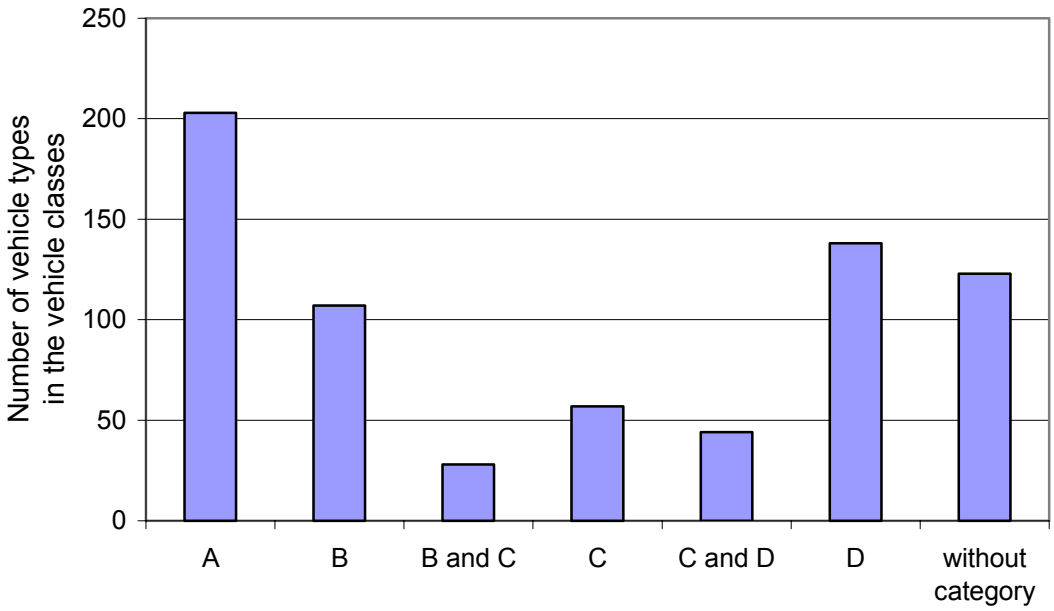


Fig. 2.8 Distribution of approved vehicle types to the vehicle categories according to 97/24/EC chapter 7

The anti manipulation measures as described in the directive 97/24/EC chapter 7 only apply to vehicles of the categories A and B to-date.

Figure 2.9 shows the distribution of the approved vehicle types in categories where the anti manipulation measures do apply and where they do not apply.

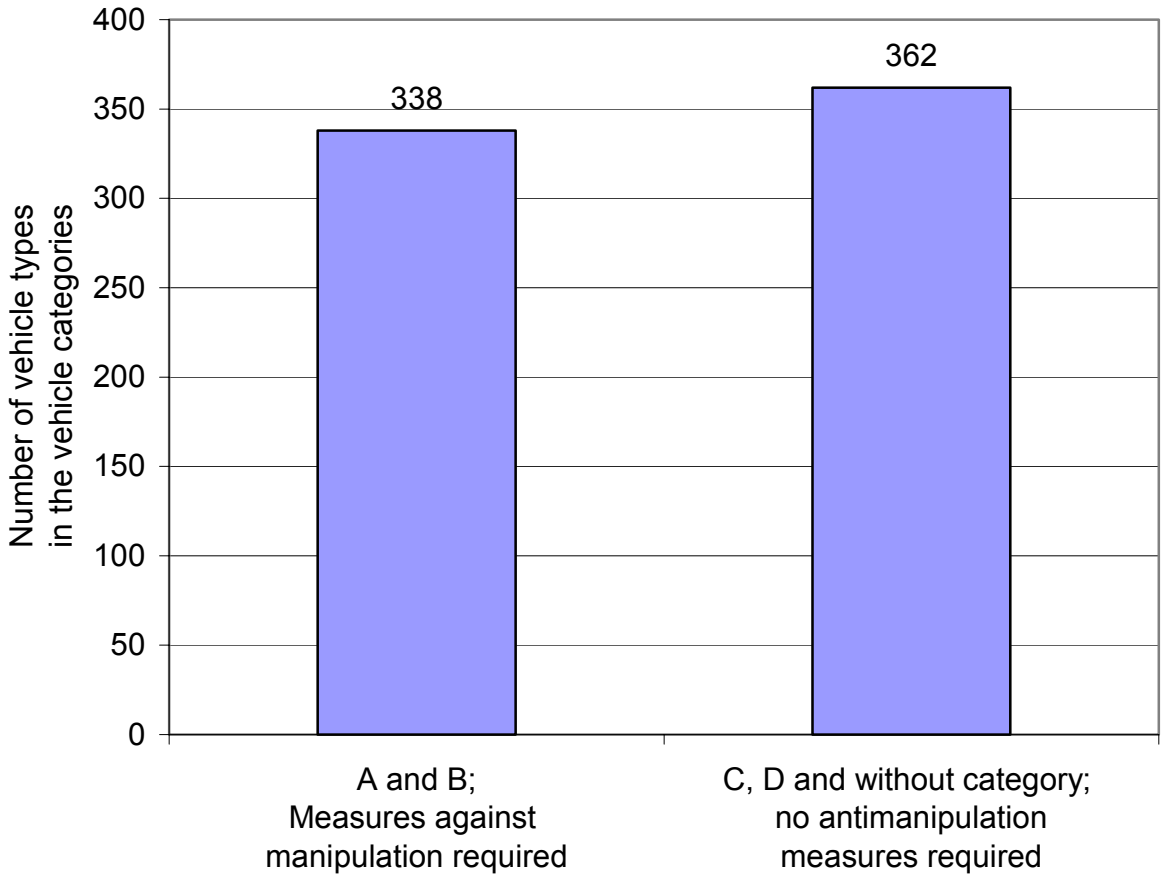


Fig. 2.9 Number of vehicle types in the vehicle categories A, B and C, D and without category

This figure shows clearly that only about 50 % of the vehicle types must comply with the anti manipulation measures.

The country of manufacture is shown on figure 2.10. This figure indicates that Italy, China, Taiwan and Korea manufacture the majority of the different vehicle types. Countries in which less than 5 approved vehicle types were manufactured are not displayed.

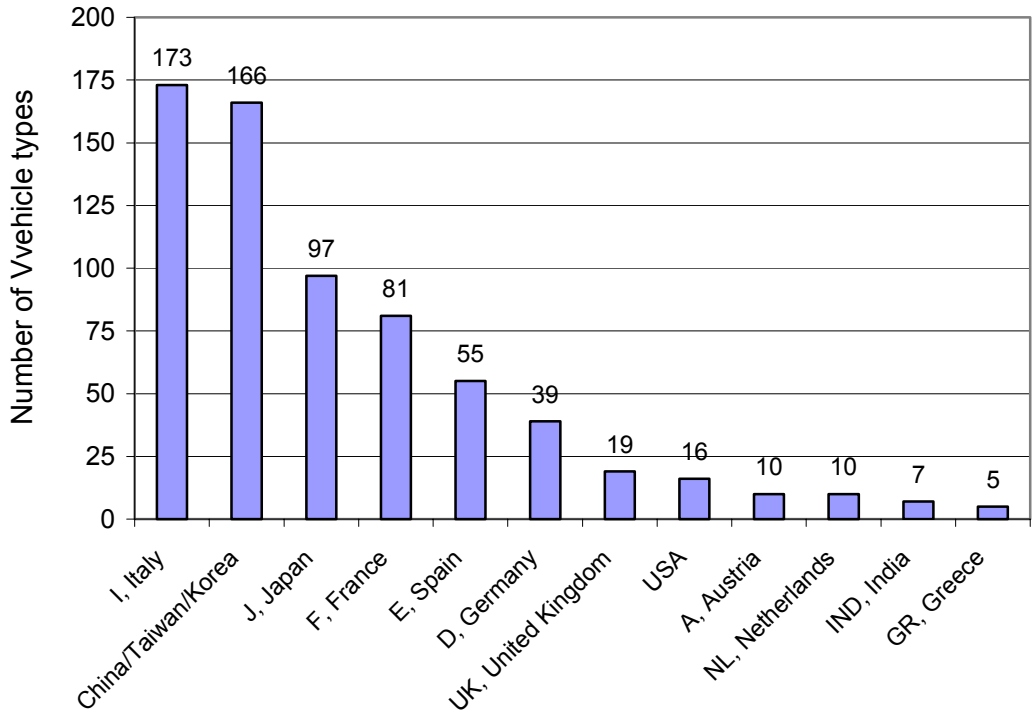


Fig. 2.10 Distribution of vehicle types to the countries of manufacture

The high percentage of vehicle types in Italy, China, Taiwan and Korea results from the high percentage of vehicles of the classes A and B produced in these countries.

China, Taiwan and Korea almost exclusively produce vehicles with a engine swept volume of up to 125 cm³. Vehicles produced in Japan for the European market are mainly equipped with engines of more than 50 cm³. Vehicles by Japanese manufacturers with engines of up to 50 cm³ are mainly manufactured in Europe.

2.1 Review of the role and function of anti-tampering devices in two- or three-wheeled motor vehicles

2.1.1 Description of the Goals and Technical Possibilities of Manipulations to two- or three-wheeled Motor Vehicles

2.1.1.1 General

This study does not cover manipulations to the chassis, tyres and optical modifications, even though they may be relevant to the vehicle's safety. The focus of this study lies on the unauthorized manipulations to two- or three-wheeled motor vehicles which are relevant to the gaseous and noise emissions of the vehicles and which can impair the vehicle safety.

Different areas of legislation were researched for the problems involved with the unauthorised manipulation of two- and three wheeled motorised vehicles:

- Directives relevant to the concerned vehicles
- Drivers license class
- periodic technical inspection
- On road spot checks
- Tax-legislation
- Insurance coverage

The directives applicable in the European Union are listed in annex A8.

Table 2.5 shows the differences between the vehicle classes as defined in the relevant directives 92/61/EC, 2002/24/EC und 97/24/EC chapter 7.

Table 2.5 Vehicle classes

Description	Category acc. to 92/61/EEC	Category acc. to 2002/24/EC	Category acc. to 97/24/EC chapter 7	Number of wheels	propulsion	max. speed km/h	Swept vol. cm³	Power outp. kW	Unladen weight kg	Power to weight ratio kW/kg
Two or three wheeled motor vehicles with an internal combustion engine of up to 50 cm³ and a maximum design speed of 45 km/h	**Mopeds**		**A, na for** [1,2)]	2, 3	O, D	≤ 45	≤ 50	---	---	---
Two wheeled motor vehicles with a max. design speed of up to 45 km/h. Swept volume for internal combustion engines max. 50 cm³ or max. continuous power output of 4 kW for electric propulsion motors.	**Mopeds**	**L1e**	**A**	2	O, D E	≤ 45	≤ 50 ---	--- ≤ 4	---	---

O	spark ignited engine	---	no account	3)	without the weight of the batteries in case of electric motors
D	compression ignited engine	1)	with side-car, 3-wheeled	4)	for vehicles transporting of people
E	electric propulsion motor	2)	symmetrically arranged wheels, 3-wheeled	5)	for vehicles transporting of goods
		na	not applicable		

Description	Category acc. to 92/61/EEC	Category acc. to 2002/24/EC	Category acc. to 97/24/EC chapter 7	Number of wheels	propulsion	max. speed km/h	Swept vol. cm³	Power outp. kW	Unladen weight kg	Power to weight ratio kW/kg
Three wheeled motor vehicles with a max. design speed of up to 45 km/h. Swept volume of up to 50 cm³ for spark ignited engines or max. power output 4 kW for other combustion engines or max. continuous power output of 4 kW for electric propulsion motors.	**Mopeds**	**L2e**	**na**	3	O D E	≤ 45	≤ 50 --- ---	--- ≤ 4 ≤ 4	---	---

O	spark ignited engine	---	no account	[3]	without the weight of the batteries in case of electric motors
D	compression ignited engine	[1]	with side-car, 3-wheeled	[4]	for vehicles transporting of people
E	electric propulsion motor	[2]	symmetrically arranged wheels, 3-wheeled	[5]	for vehicles transporting of goods
		na	not applicable		

Description	Category acc. to 92/61/EEC	Category acc. to 2002/24/EC	Category acc. to 97/24/EC chapter 7	Number of wheels	propulsion	max. speed km/h	Swept vol. cm³	Power outp. kW	Unladen weight kg	Power to weight ratio kW/kg
Four wheeled light motor vehicles with an unladen weight of up to 350 kg, not including the battery weight for electrically driven vehicles, with a max. design speed of up to 45 km/h and a swept volume of up to 50 cm³ for spark ignited engines **or** a max. power output of 4 kW for other combustion engines **or** a max. continuous power output of 4 kW for electric propulsion motors.	**4-wheeled light motor vehicles** the requirements for **mopeds** apply	**L6e** the requirements for **L2e** apply	**na**	4	O D E	≤ 45	≤ 50 --- ---	--- ≤ 4 ≤ 4	≤ 350[3)]	---
Two wheeled vehicles **with or without** side-car, with an internal combustion engine of more than 50 cm³ **and/or** a design speed of more than 45 km/h **and...**	**Motorcycles**	**L3e, L4e**[1)]	**B,** na for[1)]	2, 3[1)]	O, D	> 45 --- > 45	50 <... ≤ 125 50 <... ≤ 125 ≤ 125	≤ 11	---	---

O	spark ignited engine	---	no account	[3)]	without the weight of the batteries in case of electric motors
D	compression ignited engine	[1)]	with side-car, 3-wheeled	[4)]	for vehicles transporting of people
E	electric propulsion motor	[2)]	symmetrically arranged wheels, 3-wheeled	[5)]	for vehicles transporting of goods
		na	not applicable		

Description	Category acc. to 92/61/EEC	Category acc. to 2002/24/EC	Category acc. to 97/24/EC chapter 7	Number of wheels	propulsion	max. speed km/h	Swept vol. cm³	Power outp. kW	Unladen weight kg	Power to weight ratio kW/kg
Two wheeled motor vehicles with **or** without side-car with an internal combustion engine of a swept volume of more than 50 cm³ **and/or** a max. design speed of more than 45 km/h **and...**	**Motorcycles**	**L3e, L4e**[1)]	**C,** na for[1)]	2, 3[1)]	O, D	> 45 --- > 45	> 50 > 50 ---	≤ 25	---	≤ 0,16
Two wheeled motor vehicles with **or** without side-car and an internal combustion engine of more than 50 cm³ **and/or** a max. design speed of more than 45 km/h.	**Motorcycles**	**L3e, L4e**[1)]	**D,** na for[1)]	2, 3[1)]	O, D	> 45 --- > 45	> 50 > 50 ---	---	---	---
Three wheeled motor vehicles with three symmetrically arranged wheels with combustion engines of more than 50 cm³ swept volume **and/or** a max. design speed of more than 45 km/h	**Three wheeled motor vehicles**	**L5e**	**na**	3[2)]	O, D	> 45 --- > 45	> 50 > 50 ---	---	---	---

O	spark ignited engine	---	no account	[3)]	without the weight of the batteries in case of electric motors
D	compression ignited engine	[1)]	with side-car, 3-wheeled	[4)]	for vehicles transporting of people
E	electric propulsion motor	[2)]	symmetrically arranged wheels, 3-wheeled	[5)]	for vehicles transporting of goods
		na	not applicable		

Description	Category acc. to 92/61/EEC	Category acc. to 2002/24/EC	Category acc. to 97/24/EC chapter 7	Number of wheels	propulsion	max. speed km/h	Swept vol. cm³	Power outp. kW	Unladen weight kg	Power to weight ratio kW/kg
Four wheeled motor vehicles with a unladen weight of up to 400 kg (550 kg for vehicles transporting goods), not counting the weight of batteries in the case of electrically powered vehicles and with a power output of up to 15 kW.	**4-wheeled motor vehicles** the requirements for **3-wheeled motor vehicles** apply	**L7e** the re-quirements for **L5e** apply	**na**	4	---	---	---	≤ 15	≤ 400[3,4)] ≤ 550[3,5)]	---

O	spark ignited engine	---	no account	[3)]	without the weight of the batteries in case of electric motors
D	compression ignited engine	[1)]	with side-car, 3-wheeled	[4)]	for vehicles transporting of people
E	electric propulsion motor	[2)]	symmetrically arranged wheels, 3-wheeled	[5)]	for vehicles transporting of goods
		na	not applicable		

2.1.1.2 Technical Possibilities and Aims of the Manipulation

Appendix A2 'Possibilities, Aims and Reasons for the Manipulation' gives a tabular summary of the basic technical possibilities for the manipulation of vehicles of the categories studied. The aims the consumer wants to achieve with the unauthorized manipulation, generally are:

- higher engine power output
- higher engine torque
- alteration of torque / power characteristic
- raising top speed
- alteration of the „sound signature“

Of course the manipulations often do not achieve the goals aimed for by the consumer. As the technology used in serial production by the manufacturer of the vehicles is of high standards, adverse effects often will be introduced by the manipulation. However, negative impacts on noise and gaseous emissions are likely even in the cases where higher performance was not reached by the manipulation.

The motivation for the unauthorized and illegal manipulation can be different. Independent of the vehicle categories the motivation often lies in the technical possibilities to 'improve' the personal vehicle.

The following reasons for the unauthorized manipulation were found:

- bypassing driver's licence limitations
- saving on road tax
- saving on insurance premiums
- bypassing recurring technical inspections for special categories of vehicles

The different member states have different regulations for the above mentioned facts, so the motivation for the manipulation differs between different groups of people (for example different age limits for driver's licence) and for different categories of vehicles.

The following basic statement applies, however:

If the legislator implies borderlines for the classification of vehicles (such as swept volume, engine power output) it can be interesting for the consumer to overcome these borders by illegal measures.

2.1.1.3 Effort, Efficiency and Consequences of Manipulations

Beginning with the products for unauthorised manipulation of vehicles, which are freely available in large numbers, appendix A3 gives a rating of how high the effort for material and working time for the different manipulations is, and how deep the technical knowledge and the skill of the person performing the manipulation has to be. Further more, the efficiency of the manipulation is assessed. It is assumed here that the production line standard of the vehicles holds a high potential for 'improvement', improvement from the attitude of the manipulator. The assessment is rated in three steps:

- high
- medium
- small

This assessment is given for all vehicle categories according to directive 97/24/EC, chapter 7 and the vehicle classes according to 2002/24/EC separately. In the following columns, a cross marks possible implications with other regulations. If the vehicle safety could be impaired, the text is marked in red, if the environment could be harmed; the text is marked in green.

The large number of results in the table given in appendix A3 is a result of year long practical experience with motorbikes and the specific knowledge of the project team gathered over more than 20 years of work in this field of technology. To assess the work involved in the different unauthorised manipulations and their efficiency, vehicle manufacturers, other technical services and vehicle inspector organisations were contacted.

Following the effects to the vehicle given in the table in appendix A3

- Category of vehicle according to type approval directive 2002/24/EC
- Noise level according to 97/24/EC, chapter 9
- Brakes according to 93/41/EC
- Tyres according to 97/24/EC, chapter 1
- Emissions according to 97/24/EC, chapter 5

further influences result, which are not listed explicitly, but can be deducted logically:

Insurance-coverage

If a third party insurance cover exists for the vehicle, this insurance cover lapses when the vehicle is illegally manipulated. This statement is valid for all insurance companies operating in the European Union. In reality, this fact only matters if the manipulation can be proven after an accident happens, and this fact is then realisedby the insurance company.

Periodical technical inspection

Some of the vehicle classes covered in this report are subject to the periodic technical inspection (see appendix 7). If the manipulation alters the vehicle class by exceeding the borders of for example vehicle top speed or engine capacity, this manipulation then avoids the vehicle's requirement to be subjected to the periodic technical inspection.

Driver license classes

As the driver license classes within the member states include limits in engine capacity, power output and vehicle top speed (see appendix A6) young drivers of manipulated vehicles are in danger of driving a vehicle without holding the correct drivers license. Besides the dangers caused by the manipulation of the vehicle's technology, driving without the correct license results in an additional danger:

- The driver can not fully control the vehicle because of a lack of tuition and experience
- Immature personality as the age limit for the driver's license has not been reached
- Increased readiness to take risks
- Missing awareness of legislation

Electro-magnetic compatibility according to directive 97/24/EEC, chapter 8

The table of appendix A3 does not consider the influence on the possibility of exceeding the allowed limits of the directive 97/24/EEC, chapter 8 (electro-magnetic compatibility). Any alteration of the vehicle electronics or vehicle electrics can negatively influence the electromagnetic compatibility. It has to be controlled for each individual case, whether the type approval for electro-magnetic compatibility is still valid after the electrics/electronics of the vehicles have been altered. In any case, such a manipulation causes a risk to the in-use vehicle safety. The higher electro magnetic noise emissions can even endanger other vehicle drivers.

Example:

A moped of the category A or class L1e, respectively, is beeing manipulated, increasing the power output and the top speed.

- As the top speed is higher than 45 km/h, the vehicle does not belong to the class L1e any more, that is why the column 'category according to type approval directive 2002/24/EC' is marked.
- Higher noise levels are to be expected with higher power output – negative environmental impact.
- The required brake performance test according to 93/14/EEC is only proved for the vehicle class L1e with its lower top speed – safety-relevant!
- The higher possible top speed can cause a risk, in so far that the standard tyres are may not be designed or approved for the increased speeds according to directive 97/24/EEC, chapter 1 - safety-relevant.
- The gaseous emissions will very likely be higher than on the original vehicle - negative environmental impact.
- The insurance cover is endangered because of the technical alterations.
- Depending on the member state's legislation, different regulations for the technical inspection may apply, if the vehicle does not belong to the vehicle class L1e any more.
- With a top speed of more than 45 km/h, the vehicle cannot be legally driven by a holder of the driver's licence class M (mopeds, driver's licence according to especially German legislation) so an influence of the manipulation on driver's licence class according to 91/431/EEC is marked.
- If the power is increased by an unauthorised manipulation of the electrics/electronics of the vehicle, the electromagnetic compatibility according to 97/24/EC, chapter 8 might be impaired. This causes a risk for the in-use vehicle safety.

To sum up it can be said that all manipulations which are assessed as 'medium' or 'high' in their effectiveness always impair the vehicle safety and cause a negative impact on the environment with increased noise and gaseous emissions. Exemptions to this rule are the manipulations to the transmission which result in higher speeds at the same engine speed. Noise and gaseous emissions could possibly be reduced in some cases. This is a result of the required measurement procedure used.

2.1.1.4 Remarks to the different legislative regulations in the member states of the European Union

Legislation on Tax

The road tax for two- or three-wheeled motor vehicles differs in the member states.

All member states with the exception of France impose an annual road tax. In 1999, the average road tax spanned from 30 € in Italy to 463 € in Denmark. [3].

Two studies have been conducted on behalf of the commission, one about taxation of motor vehicles in the EU member states and one about taxation measures for the reduction of CO_2-emissions of new passenger cars. [4].

Examples:

Federal Republic of Germany

A registered vehicle is eligible for annual road tax, depending of the engine capacity. The road tax for motorcycles powered by a reciprocating piston engine amounts to 1.84 € per 25 cm³ swept volume or part there-of (valid March 2003).

Netherlands

Mopeds are not taxed at all, motorbikes are taxed depending on their weight. This tax is called: „Houderschaps Belasting“.

United Kingdom

Road tax depends on the swept volume of the motorcycle and includes mopeds.

A summary of the member states' road tax regulations of the vehicles covered by this study is given in appendix A4 [2].

Insurance

The insurance regulations differ in the member states.

The vehicle classification into different insurance classes in Germany depends essentially on the engine power output.

In the United Kingdom, motorcycles and mopeds are classified by the insurers into groups, depending on the frequency of accidents these vehicles have. A scooter with an engine capacity of 50 cm³ will be classified into a cheaper class than a 'sportive' moped, as the 'sportive' mopeds tend to be involved into more accidents. In general, a larger engine capacity will tend to the motorcycle being classified into more expensive insurance classes.

Examples of insurance rates for different vehicle models in different vehicle categories for some member states are given in appendix A5 [2].

Driving Licence

Basis for the different driving licence classes in all EU member states is the directive 91/439/EEC which in effect since 01.01.1999.

The driving licence classes are differentiated by vehicle category and minimum driver's age.

The licence classes for the vehicles covered in this study are explained in detail below.

"DRIVING LICENCES" [5]

CATEGORIES:

A: **Motorcycles** (+ sidecar)

- > 45 km/h, or
- > 50 cc if internal combustion type
- ≥ 18 years
- Option: ≥ 17 years
- → Mopeds not included

SUBCATEGORIES:

A1 :
- Optional subcategory "Light motorcycle"
- ≤ 125 cc and ≤ 11 kW
- ≥16 years
- Option: additional restrictions from Member States

Other category:

> 25 kW or > 0.16 kW/kg when having minimum 2 years of experience with a lower specification motorcycle.

This results into:

"A":
- ≤ 25 kW **and** ≤ 0.16 kW/kg
- ≥ 18 years

"Full A":
- > 25 kW **or** > 0.16 kW/kg
- Minimum 2 years experience with "A2"
- Option: Direct access at 21 years of age

OPTION: Equivalence B → A1

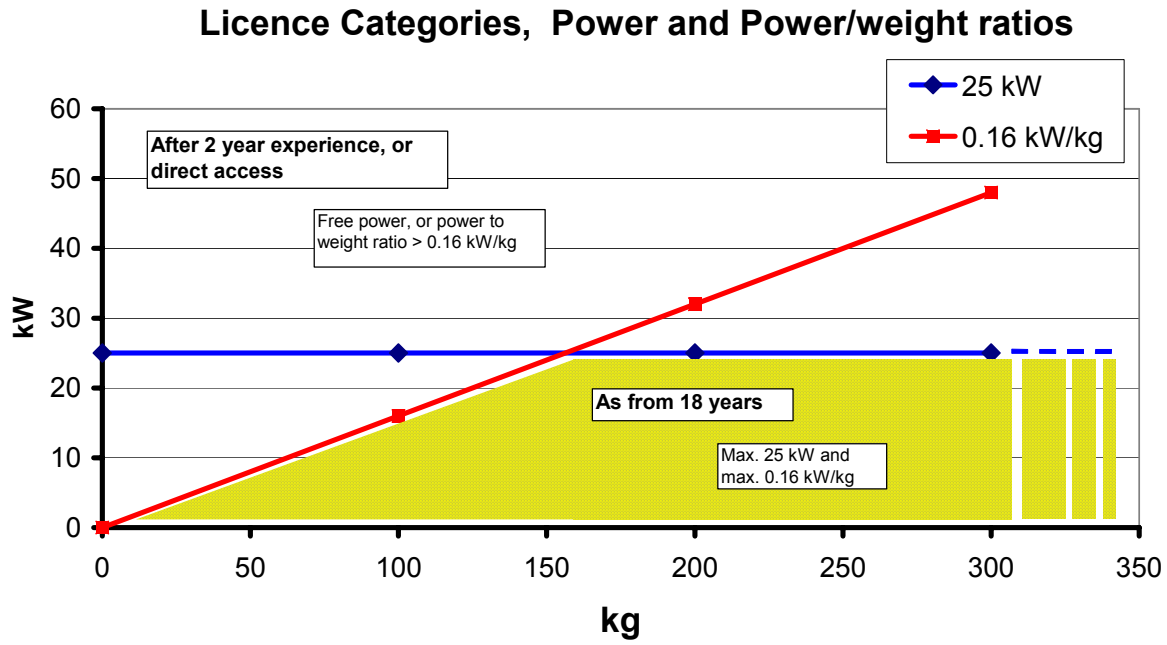
B: Motorvehicles ≥ **18 years**
Option: 17 years

SUBCATEGORIES:

B1: Tricycles and quadricycles
- ≥ 50 km/h, **or**
- ≥ 50 cc if internal combustion type
- ≤ 550 kg unladen mass (batteries excluded)
- Option: additional restrictions from Member States possible
- ≥ 16 years

OPTION: Equivalence A (or A1) → B1

Below is a chart indicating the relationship between power and power to weight ratios and the categorisation of motorcycle licences. The yellow coloured box represents the segment of the motorcycles of ≤ 25 kW and ≤ 0.16kW/kg. The white space on top represents all other motorcycles with engine power in excess of 25 kW or with a power to weight ratio in excess of 0.16 kW/kg [5].



An overview of the enforced regulations in the member states with additional regulations (if applicable) is given in appendix A6 [2].

Technical Inspection of Vehicles

The directive 96/96/EC defines minimum standards for the technical inspection of vehicles and their trailers in the European Union. Two and three wheeled vehicles, however, are not covered by this directive. Never the less, some member states have introduced different prescriptions concerning periodical technical inspections for such vehicles. Appendix A7 [2] gives details for some member states.

Conclusion

On the basis of the requirements and limitations according to the taxation of vehicles, the insurance classes, and the driver's licence classes a potential for the manipulation of motorcycles and mopeds is caused.

2.1.1.5 Literature-study on Technical Possibilities and Aims of the Manipulation

A literature-study confirmed the statements of the above chapters and found the following additional facts:

Due to different regulations concerning driver's license, insurance classes and road homologation, technically identical vehicles are built and then modified to suit the different markets. This can result in a reduction of the top speed and/or engine power output for certain markets. In certain countries the customer will then buy a vehicle with noticeably less engine power output then technically possible.

It has to be expected that a percentage of customers will then try to alter the vehicle in to the original, more powerful version [8].

It has been proven, that only about half of the owners of restricted mopeds accept the reduction of speed or power output [9], [10]. Some of the owners might see the challenge to overcome the designers built in restrictions, others see the technical possibilities of the vehicle. Knowing that the vehicle is built for higher speed and power in different market places, he will see no danger (brakes and chassis designed for higher speeds) in removing any restrictions. Others might want to separate themselves from the rest of the population by driving a non-standard bike. They require higher power output and speed and noise for their ego.

The motivation for the manipulation has a number of single reasons which can be systematically described as follows [10]:

a) Practical reasons

The technical quality (such as top speed of light mopeds) does not fulfil the owner's ideas (following the flow of traffic) and has to be "corrected".

b) Do-it yourself reasons

Satisfaction of the desire to do handicraft.

c) Social-psycological motives

Age- and development related processes and pressure through group building can influence the actions of the vehicle owner.

A driver of a not manipulated light moped (Mofa in Germany) might not be accepted in his group as the top speed of his light moped is slower than the rest of the group.

d) Individual-psycological motives

This group is driven by the relation between the driver and his vehicle, his drive style and his desire to be admired by the rest of the world.

Some middle aged drivers might require a customized bike including a special sound signature.

Manipulations to the vehicle will alter the vehicle in a way to better fulfil the driver's desires than a standard vehicle does. The total number of manipulated vehicles is unknown. In the 1980s about 50 % of the speed-reduced mopeds were manipulated: „statements to the total number of manipulations or the percentage of manipulated vehicles [Mofas and Mopeds] of the total number of vehicles differ widely between 2 % and 95 % of all vehicles. Different controls by the police showed a percentage of 10 to 60 % of manipulated vehicles with an average at about 50 % […]" [10] to be in general use.

This assumption is possibly still correct today. More precise numbers cannot be found even today. As the strange driving behaviour is more obvious than a manipulation of the vehicle, vehicles are rarely stopped for the inspection of tampering. Accidents are mostly caused by classic driving errors such as speed too high, wrong turn off procedure and not by technical faults caused by manipulation. This is the reason that no statistical analysis of manipulation exists – as such statistics do for driving under the influence of alcohol[11].

But:

"Independent of the nature of the offence, the subjective likeliness of control and punishment plays an important role. Drivers tend to obey the rules if they are threatened by control. This subjective expectation of control depends on the control applied and on the perception of the control by the driver. The control has to be more than a minimal threshold to have an effect on the driver." [8]

The same rules are valid for obedience to speed limits and to manipulation: people will manipulate the vehicles as long as the fear of discovery and sanctions is smaller than the desire for individual vehicles. Periodic spot check controls only make sense when the parts of the vehicle which can be manipulated are marked. “Efficient control by the police is [to-date] aggravated as non-legal [silencers] systems hardly differ in their appearance from approved silencers.“ [12].

2.1.2 Results of the Questionnaires to Manufacturers and Manufacturer's organisations

2.1.2.1 Returns from the questionnaires of the vehicle manufacturers

Analysis of the returns of the questionnaires to the manufacturers showed an active participation of 26 % of the contacted manufacturers. Attempts were made to increase that percentage by contacting the reluctant manufacturers by telephone and by re-sending the questionnaires to – where applicable - the correct contacts. However these actions did not significantly improve the return-rate. The period of time which the manufacturers were given to answer the questionnaires covered about 5 months (15.04.2003 to 15.09.2003), which was considered to be sufficient. It can therefore be concluded that 74 % of the manufacturers had no wish to take part in the questionnaire. Those were especially the manufacturers from China, Taiwan and South Korea. They are not so relevant for the European market.

As we received replies from all the important manufacturers, we can value the results of the questionnaire as representative. The returned questionnaires cover about 90% of the market of the European Union.

The returned questionnaires represented 288 different vehicle types. The distribution of the types to the different vehicle classes A, B, C, and D is as follows:

Table 2.6 Distribution of vehicle types to vehicle classes

Vehicle Class according to directive. 97/24/EC Chapter 7	A	B	C	D
Number of vehicle types	75	53	61	99

2.1.2.2 Results based on the questionnaire of the manufacturers

Remarks appertaining to vehicles of the classes A and B

The analysis of the returned questionnaires showed that only those measures against unauthorised manipulation are used, which are explicitly defined in directive 97/24/EC, chapter 7. This is the reason why measures against unauthorised manipulation are only applied to vehicles of the classes A and B.

Furthermore it was found that the engine development has continuously moved on since the introduction of the directive 97/24/EC chapter 7. The results of the questionnaire showed clearly that some of the possible methods of manipulation are not used any more, as they do not result in an increased engine power output and/or top speed.

The vehicle manufacturers confirmed that some modifications such as the alteration of the carburettor jets, removing the air filter or the replacement of the camshaft generally have no positive effect on the engine performance.

The reason for this engine behaviour lays in the introduction of electronic ignition systems such as, for example, the mapped ignition systems. These control the performance of the engine to a large extent, therefore alterations to the other systems have no significant influence.

Systems to re-programme the ignition systems can be purchased, so a simple alteration of the electronic ignition system is possible today. In future, systems should be developed which prohibit this simple (and very efficient) manipulation or make the manipulation obvious.

Further need for alterations of the directive 97/24/EC chapter 7 result from the adjustment of the directive 97/24/EC chapter 5 (measures against air pollution). In the long run the stricter emission limits will – from to-days view – possibly lead to an extinction of the production of two-stroke engines. Some leading manufacturers have announced their intention to halt their production of two stroke engines; others have already stopped. Some manufacturers will use techniques for after-tratment of exhaust gases.

The measures described in chapter 7 targeting two-stroke engines will have to be re-considered in the near future.

Remarks appertaining to vehicles of the classes C and D

Vehicles of the classes C and D are – according to directive 97/24/EC, chapter 7 - exempt from the measures against manipulation. The analysis of the questionnaires showed that vehicle manufacturers do not apply any measures against manipulation to these vehicles.

In these classes, simple measures are used to limit the engine power and torque at certain engine operation points to enable the vehicles to pass noise and/or emission legislation. These measures can be overcome by the vehicle owners by easily applied manipulations to the vehicles. The vehicles then generally exceed the noise and/or emission limits given by national and/or European legislation.

Such possibilities of simple manipulation of the vehicles cannot be accepted as the manipulated vehicles can alter the vehicle safety and generally have a higher impact on the environment. An adoption of the anti manipulation measures of directive 97/24/EC, chapter 7 to the vehicle classes C and D is requested by the authors of this study. However a direct application of the measures defined for vehicle classes A and B to the vehicle classes C and D is not always efficient, as the engine concepts of the different vehicle classes differ largely.

Further more the analysis showed that the engine performance and characteristic of the vehicles classes C and D is largely controlled by electronic ignition systems and the ECU. These systems are tuned to allow the vehicle to stay within the limits for noise and emissions.

Simple systems to alter the engine characteristics leading to a better engine performance can be purchased for vehicles of the classes C and D. It should be researched if measures should be developed to stop the possibility of simple manipulations to the engine characteristics, or to make these manipulations obvious in these classes too.

The manufacturers suggested measures against manipulation or the replacement of the ECU, such as electronic coding, see 2.1.3.

General remarks of the vehicle manufacturers

The vehicle manufacturer's opinion was that the already enforced measures against manipulation should not be altered to more restrictive regulations. In their view, today's measures against manipulation are sufficient.

From the view point of the vehicle manufacturers, the manufacturers and dealers of tuning parts are responsible for the unauthorised technical manipulation of two- and three wheeled motor vehicles. The vehicle manufacturers suggested regulating the after-market more stringently, even to forbid sales of the manipulation-kits, as more products are being developed in this field (especially in the tuning-business) which are aimed at overcoming the anti manipulation measures.

In the manufacturer's opinion, the technical check of the vehicles on the road was seen as an efficient contribution to preventing the unauthorised manipulation. This could be done by vehicle spot checks and would allow the vehicles to be controlled in the condition in which they are generally used. (See chapter 2.1.1).

The manufacturers suggested that the following areas should be examined in order to extend the measures against manipulation to non technical measures to stop manipulation:

- Research motivations and profiles of the people who manipulate their vehicles
- Regional differences and reasons for manipulation of vehicles
- Influence of vehicle spot checks on the manipulation of vehicles
- The part the dealers (vehicle dealers and dealers of tuning parts) play in the manipulation of vehicles
- Influence of economic measures against manufacturers/dealers of tuning-parts designed for the unauthorised manipulation of vehicles

General remarks appertaining to the manufacturer's questionnaires

The manufacturers were questioned about the technical measures aimed against unauthorised manipulation as applied today (see appendix A13, Questions to vehicle manufacturers about systems/measures against manipulation). Further more, each manufacturer was asked to suggest further measures to better protect the vehicle against manipulation and to relate those measures to the different sections of the vehicle. This possibility to introduce the manufacturer's own ideas was hardly referred to.

2.1.3 Analysis by technical experts of the strong and weak points of the different systems against unauthorised manipulation

Besides the measures against unauthorised manipulation which are in use and which are required in directive RL 97/24/EC, chapter 7, further systems which could be used were researched. These further measures were developed based on existing measures or were suggested by the vehicle manufacturers in the returned questionnaires.

All described measures are listed in appendix A9 (Description and analysis of the different technical systems/measures against unauthorised manipulation) and analysed on the basis of the returned questionnaires. The assessment of the measures is based on the technical competence of the vehicle laboratory, and on the judgement of the manufacturer's experts, and technical service personnel who were contacted by telephone.

The main results of the analysis are summarised here, further details can be found in appendix A9.

- Measures against unauthorised manipulation are only applied to two-wheeled vehicles according to directive 97/24/EC, chapter 7. It is necessary to include the three and four wheeled vehicles with identical engine concepts. For better understanding, the table for the analysis contains not only the vehicle classes as defined in directive RL 97/24/EC, chapter 7, but also the relating vehicle classes as defined in directive 2002/24/EC, as they include three and four wheeled vehicles.
- A number of technical possibilities for the manipulation of vehicles are not used any more for technical reasons, and are not relevant any more. One example is polishing the intake or the scavenging ports. As the surface quality in production is already excellent, further polishing will not alter the engine performance. Replacing or altering the camshaft will not have a significant effect on the performance of modern engines, as their characteristic is mainly defined by the electronic ignition system.
- Further measures to especially prohibit or complicate the manipulation of the electronic components have to be developed. Marking the components is one possibility, electronic coding, prohibiting the re-programming of – for example – the electronic ignition system or the ECU is another.

It can be summarised, that the engine development directed on the introduction of electronic ignition systems and ECUs results in an increased manipulation of the engine electronics. This kind of manipulation has a long tradition in other vehicle classes, such as passenger cars. The alteration of the engine performance by so called chip-tuning results in the excessive emissions of noise and pollutants similarly in passenger cars. For the development of effective anti manipulation measures the experience learned from the manipulation of passenger cars should be used as a basis. Diagnostic tools, inspection devices or other measures could so be adopted from this vehicle category.

2.2 The effective contribution made by anti-tampering measures in terms of speed, noise and gaseous emissions reductions since the multi-directive 97/24/EC came into force

2.2.1 Results of the Questionnaires to dealers of tuning kits

The focus of the questionnaire to the dealers of tuning kits was the question of the percentage of replacement and tuning parts for two wheeled motor vehicles, against the total turnover of the company. It should clearly be discriminated between parts holding an approval for road use and parts which are not approved for highway use. Further more, the parts should be organised into the vehicle classes A – D according to 97/24/EC, chapter 7. Replacement parts and tuning kits without an approval should be organised with the different components of the drive train. If the dealers had participated representatively, the questionnaire would have given a statistically relevant testimony about the market penetration of tuning parts without an approval.

The questionnaire 'Questions to dealers of tuning kits about systems/measures against manipulation (unauthorised manipulation)' is shown in appendix A6, and was sent by e-mail or mail to 88 European manufacturers and dealers of tuning-kits. Up to September 24th 2003, we had received 18 returns. Eight of these 18 returns were correctly filled in. Ten of the 18 are based on telephone contacts, as the returned questionnaires were not correctly competed and were therefore of no use. The analysis of the eight, properly filled in questionnaires showed a small percentage (about 10 %) of the sales of not road legal components. As shown in appendix A21, one third of those questioned declared, that they did not sell any products which are not road legal. The results of this questionnaire cannot be valued as representative.

Only a small percentage of the returned questionnaires dealt with parts for vehicles of the classes A and B. The not road legal components for the vehicle classes C and D were mostly in the area of exhaust systems (silencer), mixture formation, engine control unit and appertaining to the air intake system. How many parts are actually used on public roads is not known to the manufacturers and dealers.

The telephone contacts proved that the willingness to actively participate in this project (the questionnaire) was very small. It was probably suspected that the study would result in more restrictive legislation and therefore in a loss of turnover. We hardly received any information about the percentage of sales of those parts, which are only permitted to be sold for racing purposes. Even dealers who stated, when called by telephone, that they do not sell products without approvals do display such non-approved products in their prospectuses. It can be seen in catalogues and on internet sites, that many such parts are available. Our research of many internet dealers for tuning kits and replacement parts showed – especially in silencer systems without approvals – a large number of products for sale. Further more the advertising for these products is very aggresive.

A general trend towards electronic manipulation can be detected. The directive; RL 97/24/EC chapter 7, does not give sufficient counter-measures against electronic manipulation. New technical counter measures must be found, to protect the vehicles against the available electronic manipulation devices.

As a final result for the assessment of the replacement and tuning parts, the following realistic evaluation can be done:

vehicle class according to directive 97/24/EC, chap. 7	percentage of parts **not** approved for highway use on total turnover [%]
A	**50**
B	**50**
C	**30**
D	**30**

A more detailed discrimination into the components of the engine and transmission is given in the table in appendix A10.

Basis for this statements are:

- results of the questionnaires to the manufacturers and dealers of tuning parts (of limited value)
- Research of products offered on internet sites by dealers within those member states considered to be most important to the European market for two wheeled motor vehicles. (see section 2.0.3)
- Research of internet offers of dealers selling all over Europe
- Analysis of catalogues of dealers working internationally according to the range of approved and non approved parts

The evaluation is valid for the entire market of the European Union. In the different member states the values might alter by +/- 15 % as the researched offers are available throughout most member states via catalogues and the internet, the sale of products in the different member states cannot be ascertained. The following aspects could not be considered:

- The classification of the parts sold to before/after the application of the directive 97/24/EC
- The proportion of parts sold in the after-market to the original parts sold by the dealers representing a manufacturer, as these numbers are not available.

2.2.2 Results of Questions to further Institutions

2.2.2.1 Approval Authorities and Technical Services

The replies to the written questions sent to 33 contacts at the approval authorities of the European Union and of the ECE member states were hardly useful at all. We only received 4 replies, and of those, only 2 provided some relevant information. Following the analysis of the replies and the additional telephone contacts at the administrations and technical services, the following facts strike:

The problems referred to were:

- Manipulation of CVT (Variomatic)
- Detailed complaints about the noise emissions of particular vehicles
- Fundamental prohibition to alter the approved top speed of vehicle types.

We contacted 108 technical services accredited for the above mentioned directives. We only received 22 returns to our questionnaires. Most of these declared themselves to be not responsible for these directives or explained that they did not have sufficient or no experience in testing 2 and 3 wheeled vehicles. Only 4 replies were useful for this project. The following problems were discussed:

- Possibilities for manipulation, especially for vehicles with limited maximum speed.
- Conspicuous accumulation of the installation of non approved after-market silencers exceeding the allowed noise levels, some of them dramatically.
- Chiptuning
- Information on efficient manipulation is easily obtainable Europe-wide via the internet.
- The remark: „for racing-use only“ in the sales brochures does not stop the customers from using these parts in public road traffic.
- One single opinion: an efficient measure to limit unauthorised manipulation would be the inclusion of 2 and 3 wheeled vehicles into the periodic technical inspection.

The telephone contacts to the important technical services within the member states of the European Union confirmed our knowledge about the manipulation of two and three wheeled motorised vehicles. The offices contacted did not provide us with definite examples, documentation or such like, despite being contacted by us personally via phone.

2.2.2.2 Inspection Organisations

The technical inspection services in those member states where motorbikes are periodically inspected, did – except the UK and Germany - not supply us with statistic data regarding the faults found in these inspections. Telephone conversations with inspectors in, Austria, Italy, Spain and Sweden gave us the impression that the faults in these countries are closely comparable to the faults found in Germany. The data received from the UK give comparable fault rates to the ones found in Germany.

Motor cycles have to be periodically inspected in Germany every 2 years. All inspection organisations were contacted and they were asked the questions according to section 2.2:

- Have faults or conspicuous manipulations been found at type approval, during the technical inspections or at the technical inspection on the road with regard to the manipulation of engine power, top speed, and emissions of noise (for example after market silencers) at 2 and 3 wheeled motor vehicles?
- Can vehicle manufacturers and types of vehicles be named?
- Does documentation (test reports, photos) of these cases exist?

If the faults were statistically analysed, we asked for this analysis concerning the vehicles covered in this project.

At the end of the copy deadline of this report, we had received 3 sources covering technical faults of motor cycles at the periodic technical inspection in Germany.

TÜV NORD STRASSENVERKEHR GMBH, Germany

Within the scope of the periodical technical inspections of motor cycles carried out by TÜV NORD STRASSENVERKEHR GMBH in the years 2001 and 2002 statistically about 170000 motorcycles were collated each year (see appendix A11).
The following categories of faults were analysed, as they are directly connected to the manipulation to motor bikes regarding engine power output, gaseous and noise emissions:

Chassis/Frame:
623 Engine / drive train: clutch / gear box
624 Engine / drive train: drive shaft / chain, cover

Environment:
801 Exhaust system: defects / attachment
802 Exhaust system: wrong system
803 Noise emissions
804 Smoke emission
805 Gaseous emissions
806 Radio interference
807 Fuel- / gas / pipe / tank
808 Engine / drive train – oil loss
809 Engine loss of cooling liquid
810 Steering / brakes / suspension.

The percentage of faults as mentioned above was about 5% in 2001 / 2002. Highest percentages are in code 624, engine / drive train: drive shaft / chain, cover (1.9 %) and 801/802 exhaust system (1.5 %). In 2000 the code 801/802 exhaust system had a percentage of faults of even 2 %.

The code 803 noise emissions had a fault-rate of 0.6 %.

The environmentally relevant code 808, engine / drive train, loss of oil had a fault rate of 0.4 % of the inspected vehicles.

The percentage of faults shown here does not necessarily mean a manipulation of the vehicle by the driver. Only the fault code 802 is directly connected to the manipulation. The percentage of manipulated vehicles in the faulty vehicles is about 50%, the other 50% are caused by technical defects and wear.

TÜV Rheinland / Berlin-Brandenburg, Germany

The faults in noise emissions, caused by the application of the wrong silencer system, had a quote of 2 %. Other faults which could be connected to manipulation were not available for analysis.

GTÜ Gesellschaft fürTechnische Überwachung, Germany [6],[7]

In 2002, 138661 motor cycles had been inspected, 7.6 % of those showed relevant faults (in relation to the whole vehicle).
From 2000 to 2002 the quote for faults relating to environmental issues was 4 %. Environmental issues are defined by the GTÜ as silencer systems which are too loud.
An interpretation of these numbers would lead to a number of 1.1 million mopeds and motorbikes with noise emissions which are too high, being on the road.

Assessment

A calculation based on a fault rate of 4 to 5 % (detected in Germany) and a number of mopeds and motorbikes of 28 million in Europe at the end of 2002 on the road, 1.1 to 1.4 million vehicles in these classes would be in-use having the above mentioned faults. This high number of faulty vehicles is only based on the technical status of vehicles which partake in the periodic technical inspections in Germany. Even though we could not obtain statistics about faults from other member states, the extrapolation based on questions to European technical inspection services and the police is considered to be realistic. As the periodic technical inspection of two and three wheeled motorised vehicles is not standardised in Europe, the percentage of faulty vehicles is possibly by far higher in Europe as a whole.

From the beginning of the periodic technical inspections, it was shown that vehicle owners are more motivated to keep their vehicles in a good technical condition, as they must be prepared for the periodic inspection every second year. The compulsory inspection by trained inspectors increases the possibility of detecting manipulations to vehicles. The vehicle owner is therefore more reluctant to incorporate unauthorised manipulation on his or her vehicle.

The directive 96/96/EC for minimal standards of the periodic technical inspection does not include two and three wheeled motorised vehicles. Despite this, several member states have implied different regulations for the periodic technical inspections of 2 and 3 wheeled motor vehicles. Annex A7 [2] shows these regulations for some member states.

The conclusion of the project team about these facts is that 2 and 3 wheeled motor vehicles should be included in the directive 96/96/EC. Mopeds and motor bikes should be inspected every 2 years. This will result in vehicles of a better technical condition. The owners of these vehicles would be less inclined to install non approved parts on their vehicles. This would bring a significant improvement of vehicle safety and it would reduce the environmental impact of these vehicles in relation to noise, gaseous emissions and oil leakage.

A statistic evaluation of the development of the fault rates at the periodic technical inspections since the introduction of the frame directive 97/24/EC, chapter 7 is not possible, as the percentage of these vehicles which are registered and have been inspected is too small. Further more, the countries which have installed a system of periodic technical inspection for two and three wheeled motorised vehicles do not always include vehicles of the classes A and B in these inspections. Only these vehicles fall under the special regulations against unauthorised manipulation.

2.2.2.3 Others

Statistically relevant data, regarding the percentage of manipulated vehicles in use were examined within the framework of this project. Despite the fact that we did intensive research and asked officials on all levels in different member states, we could not find traceable results. A collection of representative ideas given by many local police-stations in different member states follows:

- „The main problem is the manipulation of and the use of exhaust systems without approval.“
- „If a vehicle has been manipulated, it cannot be proven on the basis of the vehicle documents.“
- „Manipulations will only be detected on the road when the effects on top speed or noise are so obvious, that they can be detected without measuring instruments.“
- „Manipulated vehicles are only found, if the driver has broken other traffic legislation (for example when he was exceeding the speed limit).“
- „As long as others are not directly endangered, it is of no interest to search for manipulated vehicles.“

Statistics about causes of accidents do not give information about the fact that vehicles may have been manipulated or not. This was confirmed by the police and by the different insurers the project team contacted. The available statistics give driving errors as the main reason for accidents. Even if the manipulation could be detected the available statistics do not classify the manipulation. In a small number of cases where obviously manipulated vehicles were involved in accidents, insurance companies were able to avoid paying for damage or compensation. The insurance firms contacted by us did not offer any statistical material about these cases.

An inquiry at different police stations in European cities did not result in any statistically relevant material. When conspicuously altered vehicles were found at spot checks, the statistic statements concerning:

- Nature of failure (manipulation or technical failure such as low tyre profile)
- Vehicle type/approval number/year built/vehicle class, to research if the vehicle is subject to the anti manipulation regulation 97/24/EC, chapter 7
- Number of vehicles with failures in relation to the total number of vehicles inspected

are missing. It must to be considered here, that only suspicious vehicles were checked.

Estimations about the percentage of vehicles, which have been illegally manipulated by the drivers vary in the member states, there are even variations between local administrative bodies. It is not possible to collate statistically relevant numbers. The interest in pursuing such illegal manipulation differs widely between the different police authorities. The only tendency which could be found is that the members of staff who are involved in these spot checks generally estimate the percentage of manipulated vehicles to be greater than those in higher authority over the police.

One example of a reply to the project team comes from the Netherlands. In the region of Uetrecht and Rotterdam, about 30 % of the vehicles tested on spot checks were found to exceed the allowed top speed by quite a large percentage. In the region of Amsterdam, the estimates for manipulated vehicles are between 70 and 75%. Vehicles with a approved power output of 0.9 kW are manipulated in a way that they could reach top speeds exceeding 100 km/h. The vehicles observed were registered on the basis of an EU-approval.

Another example of random road side inspections performed in the UK gave a failure rate of about 22 % for the exhaust systems. This percentage is far higher than in the periodic technical inspections (PTI). This proves that vehicles are altered back to a legal state before they are taken to the PTI, and strengthens the view of the project team that only a combination of road side inspections and the PTIs can reduce the number of illegally manipulated vehicles.

The project team was told that unauthorised manipulations were especially hard to detect and prove on vehicles of the classes C and D. Only extreme cases can be detected and thus removed from service.

The pursuit of manipulations to two and three wheeled motorised vehicles differs largely between the member states. Austria, Germany and the Netherlands do spot checks aimed at manipulated vehicles. Other countries did not mention such measures being aimed at the control of the correct technical condition of the two and three wheeled vehicles.

2.2.3 Examples for the Technical Realisation of Manipulations

The following examples show how simple modifications to an approved vehicle or vehicle part can result in an illegal manipulation.

2.2.3.1 Increased power by Removal of the Throttle Stop

The vehicle chosen for this example fits in the following categories:

- **L3e** (Directive 2002/24/EC) resp.
- **D** (Directive 97/24/EC, chapter 7)

The engine power output of the vehicle examined is limited by a throttle stop. The throttle stop prohibits the throttle from being fully opened. According to directive 97/24/EC, chapter 7, no anti manipulation measures are required for the vehicle category D.

The measures which are required for vehicles of the categories A and B, such as the prohibition of the installation of elements which prohibit the full opening of the throttle (see no. 3.7 in appendix to directive 97/24/EC, chapter 7) would be useful in the vehicle categories C and D, as well.

The removal of the throttle stop of the vehicle examined is very easy, no special tools are required. Removing the throttle stop is of significant influence on the approvals granted.

Top speed and power output (95/1/EC) are increased, as are the noise emissions (97/24/EC, chapter 9). Further more, the manipulation will influence the gaseous emissions approval (97/24/EC, chapter 5), the brake approval (93/14/EC) and the approval for installation of tyres (97/24/EC, chapter 1).

The following pictures show the control unit for the throttle. It is easy to see that the removal of the throttle stop results in wider opening angle of the throttle, see fig 2.11 and 2.12.

The position of the throttle stop screw can be seen in fig 2.13.

Fig. 2.10:
Throttle closed

Fig. 2.11:
Throttle open
(**with** throttle stop)

Fig. 2.12:
Throttle open
(**without** throttle stop)

Fig.. 2.13:
Throttle stop in carburettor

Fig. 2.14:
Throttle stop screw

2.2.3.2 Alteration of noise emissions by de-tuning of the silencer

The research carried out using: relevant magazines, tuning-kit-catalogues and the internet revealed not only silencers which are not approved for their use on public roads, but also silencers which hold an EEC approval according to directive 97/24/EC, chapter 9 which are easy to manipulate by alteration or removal of components inside the silencer.

The customer has therefore the possibility to effectively manipulate the vehicle to create higher noise and/or engine power without the need of specific technical knowledge or special tools. The inner parts of the silencer are not sealed by welding, being only bolted together or squeezed together. The silencer can be opened and shut and components can be removed, while the manipulation remains imperceptible from the outside.

As the approval number remains on the outside of the silencer, it is not possible to recognise the manipulation during spot checks. Many of these silencers are offered and advertised for all classes of vehicles. It must be expected therefore, that these easy to manipulate silencers are used on a considerable percentage of vehicles and that their distribution is rising rather than falling.

The following example shows how manipulations to the silencer, which can be done with little effort, can alter an approved silencer in a way that it voids the vehicle's approval. The consumer is even guided step by step, in order to carry out this manipulation in the advertisements of the manufacturer.

The silencers shown in figures 2.15 and 2.16 hold an EC-approval according to directive 97/24/EC, chapter 9, and they are suitable for Harley Davidson Motorcycles. The design of the silencer allows it to increase the noise emissions by simply turning of the 'adjustment screws'. This 'adjustment' increases the noise emissions above the allowed values and results in the expiration of the approval.

Fig. 2.15: Silencer System Knucklehead II

Fig. 2.16: Silencer system Panhead II

As the approval number remains on the silencer, even experts cannot recognise the manipulation easily. The manipulated silencer will not be detected as such at spot checks.

Vehicles, for which these silencers are designed, belong to the vehicle class D according to the directive 97/24/EC, chapter 7. Anti-manipulation measures or design regulations for the vehicles or vehicle parts are not mandatory for this vehicle category. The anti-manipulation measures are not required for the approval of the replacement silencers according to directive 97/24/EC, chapter 9.

2.2.3.3 Alteration of the transient response of a carburettor

The following possibility for manipulation was discovered on a vehicle type of the class L3e (directive 2002/24/EC) or D (directive 97/24/EC, Kap.7), respectively.

When delivered by the dealer, the vehicle is equipped with an electronic system, which alters the transient reaction of the carburettor to address certain conditions.

This system consists basically of a solenoid valve which is controlled by a control unit. The solenoid valve is connected by an air pipe to the air chamber above the membrane in the carburettor (see fig. 2.15)

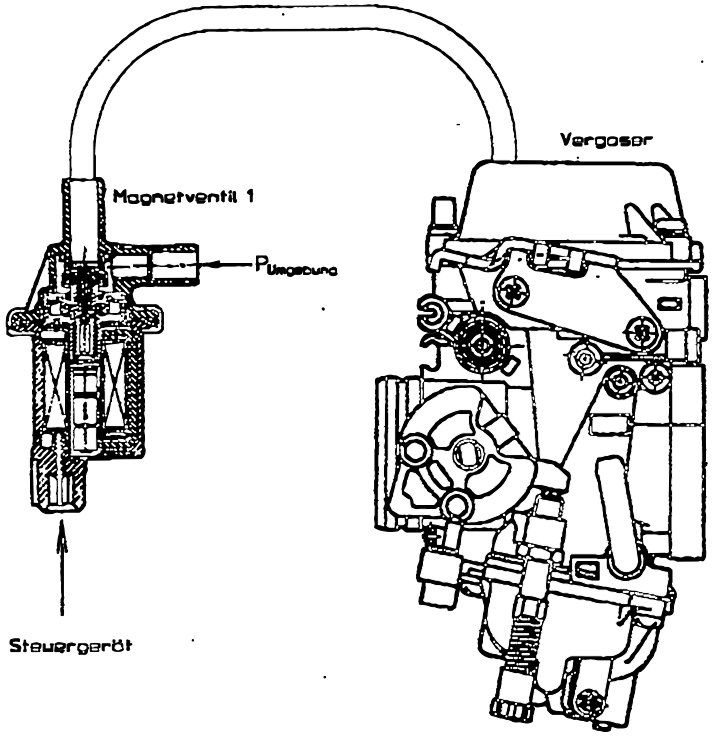


Fig. 2.15: Electronic System for controlling the carburettor

Function of the System for controlling the carburettor

The solenoid valve will be activated in second and third gear at speeds between 45 and 55 km/h at full load (wide open throttle). This causes air to enter the air chamber above the membrane resulting in a delayed opening of the piston.

Possibility for manipulation

The system can easily be de-activated. Simply; the air pipe must be disconnected and the opening in the top of the carburettor has to be shut.

Results of the manipulation

The transient response of the carburettor in second and third gear at vehicle speeds of 45 to 55 km/h and full open throttle will be improved. That results in a higher acceleration at these speeds in second and third gear.

As this speed – load – gear – combination is relevant for the measurement of the drive-by noise, the manipulation will have a direct influence on the noise approval according to directive 97/24/EC, chapter 9. An influence on the approval for the gaseous emissions according to chapter 5 of directive 97/24/EC is also to be expected, as the emissions can be influenced by an alteration of the carburettor.

2.2.3.4 Alteration of the Engine Control Unit by manipulation of the gear-sensor

This example describes manipulations which are easily possible with electronic components that can be bought at part dealers or even be assembled at home. This example shows the manipulation which can be done to a vehicle of the class L3e (directive 2002/24/EC) or D (directive 97/24/EC, chapter 7), respectively.

Figures 2.16 and 2.17 show the part as it can be bought in shops and the wiring for the self assembled version.

Fig 2.16: Part as bought in shops

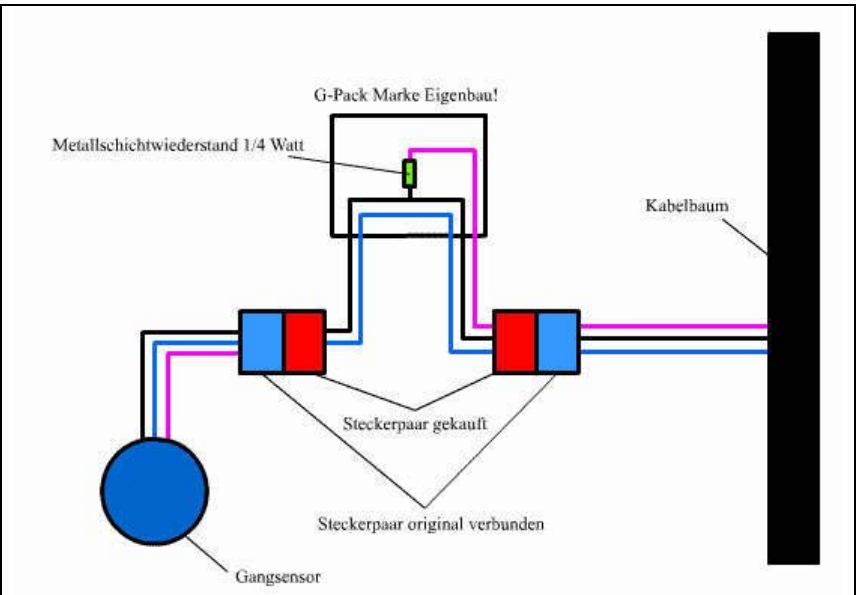


Fig 2.17: Wiring plan for self-assembly

Installation of the parts in the vehicle

As shown in fig. 2.17, the electronic component is wired in between the gear sensor and the main harness of the vehicle.

Influence on the engine control

Installation of the so called G-Pack disables the ECU to read the signals of the gear sensor. The power reduction, normally effective in 2nd and 3rd gear under full load, is disabled, as the ECU cannot read the gear sensor.

Results of the manipulation

The manipulation gives a faster throttle response and higher acceleration when the vehicle is operated in 2nd or 3rd gear under full load. The ignition timing and – on vehicles with fuel injection – the fuelling does not comply with the approved values.

As the drive-by noise is measured under the conditions mentioned above, the manipulation has a direct influence on the vehicle type approval, concerning noise emissions, according to directive 97/24/EC, chapter 9. It is possible that the approval for gaseous emissions according to directive 97/24/EC, chapter 5 will be influenced, as the alteration of the engine control will similarly alter the emissions.

2.2.3.5 Alteration of the Engine Control Unit by adding Electronic Components

A further example of manipulation is shown here. In variation to chapter 2.2.1.4, where a gear sensor was manipulated, in this example, the ECU is manipulated.

The additional electronic component shown in fig. 2.18 can be used on vehicles of the class L1e according to directive 2002/24/EC or class A according to directive 97/24/EC chapter 7 respectively.

Fig 2.18: Additional electronic component for ignition tuning

Product-description by the manufacturer

SIP - Scooter Ignition Power

The electronic add-on device for the ignition-tuning on scooters.

Chip Tuning for Scooter – **For racing only!**

The electronic unit SIP for scooters with external pick up allows the setting of a pre-ignition even with the original electronic ignition system still in place.

The operation of the SIP allows continuous operation in normal mode and tuned mode.

The SIP is wired in between the pick-up and the original ignition system CDI.

Installation of the component into the vehicle

As described in the operation manual, the additional electronic component is looped into the original wireing of the vehicle

Influence on engine control

The additional electronic component alters the ignition timing as set by the engine control unit.

Results of the manipulation

The engine power output and / or the top speed of the vehicle will be raised.

Further effects can influence the test results according to directive 97/24/EC chapter 5 (emissions) and chapter 9 (noise), as the results of these tests are mainly influenced by the engine characteristics.

2.2.3.6 Alteration of the engine control by replacement or manipulation of the ECU

Besides influencing the ECU, manipulations of the engine control are possible by replacement or re-programming of the ECU. One example is given for each of these possibilities.

Example for the replacement of the ECU

The ECU shown in fig. 2.19 can be installed into vehicles of the class L3e according to directive 2002/24/EG or class D according to directive 97/24/EG chapter 7 respectively.

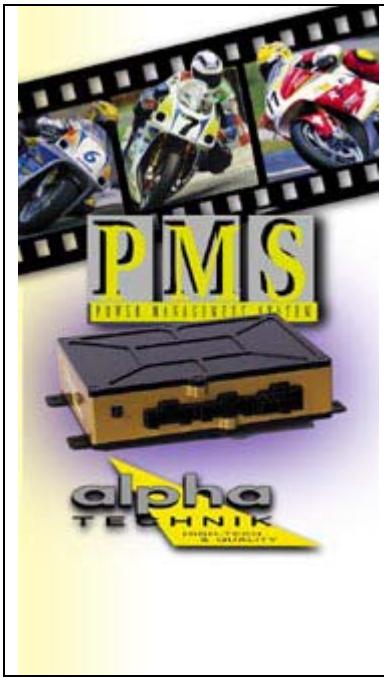


Fig 2.19: programmable ECU

Product description by the manufacturer

PMS – programmable ignition and injection control unit

(engine-management)

PMS is available in two versions:

PMS MEGA 1V for engines with carburettor
and
PMS MEGA 1E for engines with fuel injection

Example for the alteration of the ECU

Devices for the alteration or re-programming of ECUs are available. The example chosen for this report is designed for the re-programming of an exchange-ECU. It may also be used for the re-programming of the original ECU.

This device can be used in vehicles of the classes L1e according to directive 2002/24/EG or class A according to directive 97/24/EC chapter 7 respectively.

According to the product-description by the manufacturer, the „SPEED-CONTROLLER“ can perform the following alterations:

- Alteration of the vehicle top speed (for example from 25 to 45 km/h)
- Alteration of the mapping (ignition)
- Alteration of the max. engine speed

The programming can be done with a normal *„GameBoy“*.

The manufacturer declared, that this additional device was designed as a replacement for the Mofa and Moped alteration kits. The former alteration kits do not comply with the directive 97/24/EC chapter 7, as, as well as electronic measures, mechanical reductions and throttle stops were used in the intake system.

Installation into the vehicle, or alteration of the components, respectively

The ECU is installed as a replacement of the original ECU or the ECU is re-programmed with the help of the (*„SPEED-CONTROLLER“*) device.

Influence on the Engine Control

The engine characteristic (Power output, torque) can be altered significantly by the replacement or the re-programming of the ECU.

Results of the Manipulation

The engine power output and/or the top speed of the vehicle can be raised with this manipulation.

Further effects can influence the test results according to directive 97/24/EC chapter 5 (emissions) and chapter 9 (noise), as the results of these tests are mainly influenced by the engine characteristics.

2.2.4 Summary: Assessment of the efficiency of the existing legislature

The use of manipulated two and three wheeled vehicles in traffic cannot be proven with statistically relevant numbers. Performing or initiating of spot checks to gain statistics regarding the use of such vehicles could not be carried out in the frame of this study.

The Europe-wide research about the availability of non-approved spare parts and tuning parts leads to the conclusion that these not road-legal parts are bought and installed into the vehicles, and that the vehicle owner does not care about the legality of his actions. The owner wishes to raise the power output and the noise level, just as the adverts for the components suggest. A rough idea of the percentage of manipulated vehicles can be found in the statistics of the periodical technical inspection of motorbikes in Germany. It has to be expected that the percentage of manipulated vehicles in the vehicles classes which are not periodically inspected, is much higher than those in the classes which are inspected.

The EU-legislative body has the intention to mark all vehicle components which influence engine power output and emissions, and to enable the vehicles in service, to have the originality of the relevant parts, and their compliance with legislation, to be controlled.

An efficient measure is the control plate, according to directive 97/24/EC, chapter 7, and the declaration of the stationary noise on the manufacturer's plate according to directive 93/34/EC. To further improve the compliance of in-use vehicles and to make the control thereof easier, the following steps should be taken:

- The technical requirements for the effective control have to be formulated, this could be done by an improved system of the marking of relevant components on vehicles of all classes.

- On spot checks of vehicles on the road and/or periodically technical inspections have to be introduced into the regulations and effectively carried out.

The directive 96/96/EC concerning the periodical technical inspection (PTI) does not include two- and three wheeled motorised vehicles, a control of these vehicles is therefore not guaranteed on the European scale. Some member states have included the PTI of two-wheeled vehicles in their national legislation; in most cases only motorbikes of larger engine capacity are included. One problem concerning the PTI is that owners of manipulated vehicles will re construct their vehicles (only) for the date of the inspection into regulation conforming status. Therefore the project team comes to the conclusion that the number of illegally manipulated vehicles can only be lowered by additionally performed spot checks.

As the two and three wheeled motor vehicles are basically not technically inspected according to unauthorised manipulations, the drivers all over Europe have no scruples against performing these manipulations. As efficient controls are not performed in most member states, the danger of being fined for the illegal manipulations hardly exists in reality.

If spot checks were performed, they would not only pinpoint the manipulated vehicles, but they would lead to greater awareness of the dangers of detection by the vehicle owners, and could prevent people from manipulating their vehicles.

The technical requirements for the spot checks by the responsible bodies in the member states are given by the corresponding directive 2000/30/EC for trucks. It would be desirable to extend this directive to the vehicles in this study, and to have these spot checks performed in the member states.

The EU-regulations against manipulation are aimed at the vehicle manufacturers. An overwhelming percentage of the components for manipulation are offered by vehicle part-dealers, to whom this is not forbidden. It should be discussed if the offering, sale, buying and use of vehicle parts which are designed to manipulate vehicles should be forbidden.

The experience of the members of the project team and those at other accredited European test laboratories confirm the thesis that a trend can be detected, showing that the vehicle and parts manufacturers do not try to fulfil the sense or follow the aim of a directive or regulation, but just follow the text of the directives. Technical services and the approval authorities cannot alter this tendency, as the manufacturers have the legal claim to receive the approval. Manufacturers do therefore use all the possibilities, as long as they are not explicitly forbidden. One example is the application of directive 97/24/EC, chapter 9 for replacement silencers. As the directive does not include the protection against manipulation, the silencers are (often) built without the constructive protection against manipulation, therefore enabling the owner to alter the system easily to one with higher noise emissions and possibly higher power output. As the regulations do not forbid such designs, these systems have to be approved. This could be prohibited, if the anti manipulation legislation – design and marking - would be applied to these vehicle components as well.

More and more manufacturers of parts and their dealers advertise their products as easily to manipulate, and that it is possible with no effort to alter the components into an illegal state. It has to be questioned if such manufacturers fulfil the requirements for approval holders for EC-type-approvals.

It has been seen that the marking of a replacement silencer only with the approval number according to directive 97/24/EC, chapter 9, but not with the range of application, does not allow for the detection of vehicles to which component has illegally been installed. The range of application given in the installation guide, in the adverts or on the sales brochure does not support the inspectors carrying out spot checks. This fact was confirmed in discussions with the institutions of several member states. The range of application of a part could be printed on a credit card size document, which has to be carried by the vehicle owner and be shown to authorised people. Even though this rule does not yet exist, reputed manufacturers already issue such cards to give the owner proof that the system is correctly installed.

The question according to article 2 of the directive 97/24/EC, if the measures against unauthorised manipulation in the view of the aspired aims are appropriate, inappropriate or going too far, has to be answered from the view of the project team as follows:

Since the coming into force of the directive 97/24/EC, which should have been applied from 17.06.1999 for new vehicles by the member-states, no trend can be detected in the European Union which shows an increase or a decrease of manipulations to two and three wheeled motor vehicles. The reasons for that are as follows:

- No statistics are available for the time before the directive came into force.
- The number of vehicles which have been approved according to the above mentioned directive, is still relatively small.
- In the investigations known to the project team, it was never recorded if the vehicles found to be at fault were originally approved using the directive 97/24/EC

Based on

- the technical analysis by the vehicle inspectors
- the year long experience in periodic technical inspections in our company and in other European vehicle inspection organisations
- the Europe-wide research regarding the availability of a large number of vehicle parts which allow for the unauthorised manipulation of vehicles
- the research into examples showing the application of manipulations
- the statements by different institutions such as; approval authorities and the police in different member states of the European Union

the project team draws the conclusions that there is a need for alterations to the directive. The following aspects need special attention:

- Consideration of modern vehicle technology (such as the electronic components)
- Improvement of the marking of the vehicle components
- An efficient control of vehicles by spot checks

To prove the conclusions of the project team further and to improve the political acceptance within the member states, the following measures are seen to be essential:

- Spot checks focused on two and three wheeled vehicles of the different vehicle classes, and of vehicles first registered before and after 17.06.1999 should be performed EU-wide. These spot checks should be done under identical conditions and standards, including measurements of emissions and noise, in the years 2004 to 2009 with the support of the local authorities.
- Research into vehicle accidents in the European Union, including the documentation of the technical state of the vehicles involved.
- In those member states where the two and three wheeled motorised vehicles are subject of periodic technical inspections, the statistics should include the unauthorised manipulation of vehicles.
- Market-observation into the publication and offers of electronic tuning devices
- Practical research into the influence of electronic tuning on emissions, noise and the top speed, with the measurement of emissions and noise on tuned vehicles

2.3 Recommendations concerning the scope, extent and content of possible amendments to directive 97/24/EC, chapter 7 and further directives

2.3.1 Requirements for alterations to the directive 97/24/EC, chapter 7 (Anti-manipulation)

The table in appendix A12 gives recommendations for alterations to the directive 97/24/EC chapter 7. These recommendations were formulated on the basis of the research and questionnaires conducted within the frame work of this project.

The structure of the directive as it exists today does not allow for the implementation all the knowledge gained in the project to be integrated into the existing directive. The extension of the requirements to a wider range of vehicle classes and the extension of the required measures against manipulation demand a restructuring of the directive itself.

The suggestion for the alteration of the directive 97/24/EC, chapter 7 as demonstrated in appendix A12, only includes the extension of today's measures to further vehicle classes and the assessment of the measures as defined in the directive. Further single measures to prevent manipulations are listed in appendix A9 (Description and analysis of various technical systems/measures to prevent unauthorised manipulation). Those were developed from the analysis of the different systems.

The following alterations are therefore imperative:

- Extension of the requirements as defined in the directive to include further vehicle classes, as these can, in part, be manipulated in an identical manner. It would therefore make sense to use the definitions of vehicle classes as defined in the directive 2002/24/EG, and to add B, C or D to the vehicle class L3e.

- Adjustment of the measures against simple manipulations of today's technology, and/or development of further measures such as the demands of electronic components.

- Re-structure the directive to the components of the drive-train. This would result in a more simple implementation of further measures, and therefore an easier vehicle inspection. The vehicle classes could be given here in direct relation to the measures which have to be applied (in the form of a table).

The following structure for the revised directive is suggested:

Recommendation for the re-structuring of the directive 97/24/EC chapter 7:

1. Definitions
2. General regulations
   - 2.1. Engine
     - 2.1.1 Cylinder / piston
     - 2.1.2 Crankshaft
     - 2.1.3 Mixture formation
     - 2.1.4 Exhaust system
     - 2.1.5 Engine control unit
   - 2.2. Transmission
     - 2.2.1 Automatic transmission (Variomatic)
     - 2.2.2 Secondary transmission (pinion and sprocket)
     - 2.2.3 Gear box
   - 2.3. Marking
     - 2.3.1 Components
     - 2.3.2 Control plate

With this structure it would be possible to implement all results of the analysis regarding the different possibilities for manipulation and the counter measures as listed in appendix A9.

2.3.2 Requirements for alterations of the directive 97/24/EC, chapter 9 (noise-level)

The questionnaires and research conducted in this study have shown a requirement for an alteration of the directive for the measurement of the noise level and the silencer.

The example given in chapter 2.2.1.2 which is an after-market silencer system, approved according to directive 97/24/EC, chapter 9 shows, that regulations for the design of such systems have to be included. The noise suppressing effect of the silencer can be altered by a simple turn of an ‘adjustment-screw’. This ‘adjustment’ results in higher noise emissions. This possibility does not contradict the regulation, as the regulation does not include design criteria.

The components of the silencer system should be so designed, that a removal of parts such as spacers or silencer parts is not possible. Silencer systems are available on the after-market, and even some production silencer systems can be manipulated in this way. The emitted noise levels rise dramatically when this is done.

The following alterations covering the vehicle and component design should be included in the directive 97/24/EC, chapter 9:

- Exhaust silencers must not be equipped with adaption devices, such as adjustment screws, which when interfered with, can cause greatly increased noise emissions. If the air intake system (air filter and/or intake silencer) is noise relevant, this rule should be applied accordingly.

- The components of the exhaust system (pipes, fittings and silencer) must not include connections which can be opened in order to remove parts (spacer discs, silencer parts).

Further need for alterations results from the recommendation of the alteration of the directive 97/24/EC, chapter 7. In chapter 2.3.1 it was mentioned that further demands especially to electronic components have to be formulated. Chapter 5 of the directive (emissions) formulates the demands which can be transferred to chapter 9. Annex II forbids ‘switch off devices’ which can alter parts of the emission relevant installation during normal vehicle use. This demand should therefore be included into directive 97/24/EC, chapter 9:

- „Switch off devices“ which recognise normal driving conditions and alter or deactivate the function of the exhaust silencer and/or the intake system, should not be allowed.

The demand for the alterations outlined above, relates mainly to the annexes II, III and IV of the directive 97/24/EC, chapter 9. These chapters deal with definitions, method of testing and the description pages for mopeds, motorbikes and three wheeled mopeds- and motorised vehicles. The demands formulated above have therefore to be included in each of the annexes.

Besides the extension of the technical measures, the marking which is already used for after market silencers should be extended to the original silencers. The annexes II, III and IV formulate only the requirement to mark the after-market silencers. A transfer of these demands to original silencers is recommended. This marking of components should be in accordance with chapter 7 of the directive 97/24/EC.

The following requirements should be included into an alteration of the directive:

- The exhaust silencer system of a vehicle should be marked in a manner, that the silencer system can be related to a certain vehicle type. The same is required for the intake system. The marking should be done in connection with the control plate (compare directive 97/24/EC, chapter 7).

It has to be possible to easily relate an after-market silencer system to the vehicle types which are listed in the type approval for that system, when it is installed on the vehicle. This control, should the silencer system be approved for the vehicle in which it is installed, has to be easily to carry out at spot checks. Therefore annex VI of the directive 97/24/EC, chapter 9 has to be supplemented as follows:

- The information according to 4.1 to 4.3 of annex VI and additionally the approval number of the exhaust system must be delivered with the silencer system on a document which is to be carried at all times by the driver, following the installation of the silencer system. The documentation which is delivered with the silencer system must include the information that the driver has to carry this document with him/her.

Further requirement for alterations results from the validation of the directive 2002/24/EC. The vehicle classes L1e to L7e or the classes as suggested in this study have to be incorporated into the directive 97/24/EC, chapter 9, to enable the correct classification of the vehicles according to the annexes II, III and IV.

2.3.3 Requirements for alterations to the directive 96/96/EC (periodic technical inspection)

The prevention of unauthorised manipulations to vehicles or their parts in the long run is only possible with an efficient technical inspection of in service vehicles. Besides the results of the periodic technical inspections (PTI) as shown in this report, the PTI results in safer vehicles and therefore in safer highways. Vehicles which are subject of the PTI (such as motorbikes in Germany) generally display a positive response to the parameters of the PTI in that the technical condition of the vehicles is high. The vehicle owners care more for their vehicles and have them serviced regularly.

It remains to be discussed which classes of vehicles should be included in the directive 96/96/EC (PTI). The additional cost of the PTI could add significantly to the running cost, especially on small motorbikes and scooters. On the other hand it is specifically these classes of vehicles which have a greater potential for manipulation by their – especially - young drivers. As shown in this report, the manipulations make the vehicles unsafe and can cause accidents, plus the manipulated vehicles can exceed the legal limits for noise and gaseous emissions. At least motorbikes and four-wheeled motorised vehicles (L7e) should be included in the PTI in all EU-member states.

The directive 96/96/EC should be altered as follows:

Annex 1: Vehicle groups included in the periodic technical inspection and the time interval in which they should be inspected.

Integration of an additional vehicle group 7 and determination of the time interval in which they shall be inspected:

Group 7: Vehicles of the classes L3e, L4e, L5e, L6e and L7e as defined in directive 2002/24/EC

Time interval: Four years after they enter service initially, and every second year after that.

Annex 2: Obligatory inspection areas

The areas of inspection have to be controlled for their application to the new vehicle group 7, and might need to be altered accordingly. The following points require special attention:

- The vehicle brakes can be checked by a simple drive test, in which the inspector can assess the performance of the various brakes.
- A simple test of the gaseous emissions should be developed to enable the use of the emission testing equipment and techniques used for other vehicle groups
- To detect manipulation to the silencers, the stationary noise should be measured during the PTI.
- The point 10 ‘identification of the vehicle’ should include the identification of all vehicle components listed on the control plate.

2.3.4 Requirements for alterations to the directive 2002/24/EG (Type-approval for 2- and 3-wheeled motorised vehicles)

The alterations to the directives which deal with vehicle components or systems such as alterations of directive 97/24/EC, chapter 7 or chapter 9, can result in alterations of the directive 2002/24/EC. This directive covers the type approval of the entire vehicle, and is therefore connected to the regulations for the testing of the components or systems.

The alterations required in the type approval directive do not relate to the procedure of the type approval, but mostly to chapter I (scope of the directive and definitions) and to annex II (description page).

Alterations in chapter I

As explained earlier in this study, different vehicle classes are defined in the regulations for the testing of two-and three wheeled vehicles. The directive 97/24/EC, chapter 7 distinguishes between classes A, B, C and D whereas the directive 2002/24/EG defines the classes L1e to L7e.

Chapter 2.1.1.2 compares the different vehicle classes. It is clearly defined there, that the vehicle class A corresponds mainly with the definition of vehicle class L1e, and that the vehicle classes B, C and D are divisions of the vehicle class L3e.

An extension of the definitions of the vehicle classes is required for the alteration of the directive 97/24/EC, chapter 7. Revised definitions also allows for the transfer of the measures against unauthorised manipulation to other vehicle classes.

The following definitions of vehicle classes are therefore proposed for the alterations of the definitions in chapter 1 of directive 2002/24/EC:

Table 2.6 New definition of vehicle classes in directive 2002/24/EC

Definition	Description	vehicle class	Remarks
Small motorbikes, meaning 2-wheeled motorised vehicles	**Two wheeled** motor vehicles with a max. design speed of up to 45 km/h. Swept volume for internal combustion engines max. 50 cm³ or max. continuous power output of 4 kW for electric propulsion motors.	L1e	Corresponds with the definition of class A acc. to dir. 97/24/EC, chap. 7, with the exemption of the power limit for electric motors.
Small motorbikes meaning 3-wheeled motorised vehicles	**Three wheeled** motor vehicles with a max. design speed of up to 45 km/h. Swept volume of up to 50 cm³ for spark ignited engines or max. power output 4 kW for other combustion engines or max. continuous power output of 4 kW for electric propulsion motors	L2e	Drive units correspond mainly with class L1e.
Motorbikes	Two wheeled vehicles **without** side-car, with an internal combustion engine of more than 50 cm³ **and/or** a design speed of more than 45 km/h, with swept volume of up to 125 cm³ and max. power output 11 kW	$L3e^{B}$	Corresponds with the definition of class B acc. to dir. 97/24/EC, chap. 7.
Motorbikes	Two wheeled motor vehicles **without** side-car with an internal combustion engine of a swept volume of more than 50 cm³ and/or a max. design speed of more than 45 km/h, with a power output of up to 25 kW and a power to weight ratio of up to 0.16 kW/kg; related to the vehicle mass in driveable condition as defined in appendix II footnote (d) number 2 of directive 2002/24/EC	$L3e^{C}$	Corresponds with the definition of class C acc. to dir. 97/24/EC, chap. 7.
Motorbikes	Two wheeled motor vehicles **without** side-car and an internal combustion engine of more than 50 cm³ and/or a max. design speed of more than 45 km/h.	$L3e^{D}$	Corresponds with the definition of class D acc. to dir. 97/24/EC, chap. 7.
Motorbikes with side-car	Two wheeled motor vehicles **with** side-car and an internal combustion engine of more than 50 cm³ and/or a max. design speed of more than 45 km/h.	L4e	Drive units correspond with class $L3e^{D}$.

Definition	Description	vehicle class	Remarks
3-wheeled vehicles	Three wheeled motor vehicles with three symmetrically arranged wheels with combustion engines of more than 50 cm³ swept volume and/or a max. design speed of more than 45 km/h	L5e	
4-wheeled light vehicles (motorised)	Four wheeled light motor vehicles with an unladen weight of up to 350 kg, not including the battery weight for electrically driven vehicles, with a max. design speed of up to 45 km/h and a swept volume of up to 50 cm³ for spark ignited engines or a max. power output of 4 kW for other combustion engines or a max. continuous power output of 4 kW for electric propulsion motors.	L6e	Drive units correspond with class L2e.
4-wheeled motorised vehicles	Four wheeled motor vehicles with an unladen weight of up to 400 kg (550 kg for vehicles transporting goods), not counting the weight of batteries in the case of electrically powered vehicles and with a power output of up to 15 kW.	L7e	

The definition of the vehicle classes used here was discussed in section 2.3.1, and is also used in the recommendations for alterations to the directive 97/24/EC, chapter 7 (see appendix A23).

A further division of the classes L4e and L5e into sub-groups B, C and D was not taken into consideration, as very few vehicles with power reduced engines are offered in these classes.

Alteration to annex II

The requirements for alterations of the description sheets-explained in annex II-results from the recommendations for the alteration to the directive 97/24/EC, chapter 7.

All measures which are additionally introduced into the directive, such as the marking of components, must be included in the description sheet. The description of the design and placement of the control plate according to directive 97/24/EC, chapter 7 (see annex II, B, No. 1.6) has to be part of the description sheet for all vehicle classes.

Further alterations can be the result of wider technical demands for the measures against manipulation. For example an extension of the description of technical components especially the technical data of electronic components may be required.

Specific statements regarding the required alterations can only be made, when the directive 97/24/EC, chapter 7 has been revised or altered, respectively.

3 Summery

The department of Motor Vehicle System and Traffic Routing Technique, Test Laboratory Motor Vehicle Engineering of the TÜV NORD STRASSENVERKEHR GMBH & Co. KG has prepared a study on devices against unauthorised manipulation of two- and three-wheeled motorised vehicles to the order of the European Commission (Contract No.: FIF. 20020691) between December 2002 and December 2003.

The initial section researched and demonstrated the roll and the function of devices against unauthorised manipulation, within the different vehicle classes of the framework-directive 2002/24/EC. The main result is an extensive analysis and assessment of those systems and measures against manipulation by our experts, (as described in directive 97/24/EC, chapter 7) which are currently in use. Further more, systems and measures according to today's state-of-the-art and also that of the future development of vehicle technology were assessed. The following trends could be observed:

- The classic engine tuning loses importance, measures such as polishing the scavenging ports or the intake pipes, or the use of 'hot' camshafts will not result in a significantly increased power output, despite the high effort required for the work.
- Further measures which prevent the manipulation of-especially electronic components (chip-tuning) remain to be developed. Continuous monitoring of the development of this technology is urgently required.
- Systems/measures against unauthorised manipulation are not yet legally required for all vehicle classes. Vehicle classes outside the directive 97/24/EC, chapter 7 can be easily manipulated.

The second part of the study assesses the efficiency of the existing legal regulations.
The on-road use of manipulated two and three wheeled motorised vehicles cannot be statistically analysed for the time before and after the introduction of chapter 7 of the directive 97/25/EC , as the required data are not available.

An estimation of the magnitude of the manipulations can be found in statistics and estimations of some European inspection services in the member states, in which these vehicles are subject to periodic technical inspection. The percentage of faults found there is about 5%, it can be expected that the percentage of faulty vehicles is higher in those member states where no periodic technical inspection is required for this group of vehicles.

During the project work, it became clear that a large number of parts for the manipulation of the researched vehicle classes are freely available in Europe. Europe-wide questionnaires to part dealers and part manufacturers as well as research via the internet, show a high market-potential of these parts. Despite this fact, the actual use of these parts in normal traffic cannot be proven, as statistically relevant data from on the road spot checks are not available. Discussions with the authorities in the member states showed that especially manipulated exhaust systems of two and three wheeled motor vehicles with their resulting high noise emissions are seen as a problem. Increased engine-power output by unauthorised manipulation, higher emissions or vehicle accidents which could be directly or indirectly caused as a result of the manipulations are not listed in any statistic.

Based on

- the technical analysis by the vehicle inspectors
- the year long experience in periodic technical inspections in our company and in other European vehicle inspection organisations
- the Europe-wide research regarding the availability of a large number of vehicle parts which allow for the unauthorised manipulation of vehicles
- the research into examples showing the application of manipulations
- the statements by different institutions such as; approval authorities and the police in different member states of the European Union

the project team formulated alterations to the directives

- 97/24/EC, chapter 7 (Anti-manipulation)
- 97/24/EC, chapter 9 (noise level)
- 96/96/EC (technical inspection)
- 2002/24/EC (Type-approval for 2- or 3-wheeled motorised vehicles)

in the third part of the study. The following aspects were focused upon:

- Extension of the existing regulations against manipulation to further vehicle classes according to the framework-directive 2002/24/EC
- Consideration of modern vehicle technology (introduction of electronic components)
- Improvement of the marking of vehicle components
- Efficient control of vehicles in service (spot checks and periodic technical inspections)

The recommendations for the alterations consider factors such as economy, or the cost efficiency, to avoid excessive demands on the industry and the consumers.

The recommended measures are directly dependant on each other. This means that a partial introduction of the recommended alterations to the directive, will not result in an efficient control of manipulations to two and three wheeled motorised vehicles of all classes.

The results of the study show a demand for further measures which should be introduced in future:

- Systematic performance of spot checks (between 2004 and 2009) within the EU on two and three wheeled motorised vehicles which have been approved before, and after chapter 7 of the directive 97/24/EC came into force. These spot checks should focus on the technical condition of the vehicles and on the noise and gaseous emissions, the conditions and interpretation of the measured values should be identical throughout the member states, these spot checks should be supported by the responsible national authorities. The data collected will enable a conclusion to be drawn; about whether the anti tampering measures according to chapter 7 of 97/24/EC are effective by the year 2009 .
- Systematic research of and collation of data drawn from accidents involving mopeds and motorbikes in the EU, focusing on the regulation-corresponding state of the involved two- and three-wheeled vehicles
- Market observation into the offering of electronic tuning measures.
- Research into the influence of electronic tuning on gaseous and noise emissions and on top speed, using sample vehicles.
- Detailed introduction of the recommended alterations to the directives

acc.	.....	according
ACEM	.....	Association des Constructeurs Européens de Motocycles
AU	.....	Austria
B	.....	Belgium
cc	.....	cm³
chap.	.....	chapter
CITA	.....	Comité International de l'Inspection Technique Automobile
CVT	.....	Continuous Variable Transmission
CW	.....	Calenderweek
D	.....	Germany / compression ignited engine
DK	.....	Denmark
DL	.....	Driving license
E	.....	Spain / electric propulsion motor
ECE	.....	Economic Commission for Europe
ECU	.....	electronic control unit
ED	.....	Engine Displacement
EMC	.....	Electromagnetic Compatibility
EP	.....	Engine Power
F	.....	France
FC	.....	Fault code
FHp	.....	Fiscal Horsepower
Fig.	.....	Figure
FP	.....	Fiscal Power
GDL	.....	Grand Duchy of Luxembourg
GR	.....	Greece
GTÜ	.....	Gesellschaft für Technische Überwachung
I	.....	Italy
IRL	.....	Ireland

max.	.....	maximum
na	.....	not applicable
NL	.....	Netherlands
no.	.....	number
O	.....	spark ignited engine
outp.	.....	output
P	.....	Portugal
PTI	.....	Periodic Technical Inspection
PTW	.....	Powered Two Wheelers
S	.....	Sweden
SF	.....	Finland
SIP	.....	Scooter Ignition Power
TDC	.....	top dead center
UK	.....	United Kingdom
TI	.....	technical inspection
TÜV	.....	Technischer Überwachungs Verein
vol.	.....	Volume
y.o.	.....	years old

	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EEC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	technical aims of the manipulation	reasons for the manipulation
Manipulation of the engine			
Cylinder	altering charge ports to change timing (2-stroke)	improving charge exchange and power	By-passing the driver's license class reducing the insurance rates
	polishing the charge ports	improving the charge exchange by reducing the flow resistance	By-passing the driver's license class reducing the insurance rates
	enlarge the swept volume by re-bore or exchange of cylinder	increased power and torque	By-passing the driver's license class reducing the road tax (Germany) reducing the insurance rates
Carburettor	adjusted fuel flow with altered main jet	increased power and torque	By-passing the driver's license class reducing the insurance rates
	removing throttle stop	increased power and torque by removing legislative limits	By-passing the driver's license class reducing the insurance rates
	replacement of the carburettor	increased power and torque	By-passing the driver's license class reducing the insurance rates

	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EEC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	technical aims of the manipulation	reasons for the manipulation
Manipulation of the engine (continued)			
Intake system / intake port / intake manifold	polishing the intake	improving the charge exchange by reducing the flow resistance	By-passing the driver's license class reducing the insurance rates
	removing or replacing the air filter material	increased power and torque with improved charge exchange caused by reduced flow resistance	By-passing the driver's license class reducing the insurance rates
	increased manifold diameter	increased power and torque by increased charge volume	By-passing the driver's license class reducing the insurance rates
Exhaust system	alteration of the exhaust diameter by replacement	increased power and torque by improved exhaust volume	By-passing the driver's license class reducing the insurance rates
	alteration of resonance exhaust systems	increased power and torque by altered charge exchange at 2-stroke engines	By-passing the driver's license class reducing the insurance rates
	removing throttles	increased power and torque by improved exhaust volume	By-passing the driver's license class reducing the insurance rates

	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EEC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	technical aims of the manipulation	reasons for the manipulation
Manipulation of the engine (continued)			
engine control system	alteration of the engine ECU by additional ECUs	improved power, torque and higher engine speed by altered ignition timing	By-passing the driver's license class reducing the insurance rates
	removing the engine speed limiter by alteration of the throttle stop	increased power and torque by improved charge volume	By-passing the driver's license class reducing the insurance rates
	replacement of the ECU	improved power, torque and higher engine speed by altered ignition timing	By-passing the driver's license class reducing the insurance rates
	removing ECUs which limit the engine speed	improved power and higher engine speed by altered ignition timing	By-passing the driver's license class reducing the insurance rates
	re-programming ECU	improved power and speed	By-passing the driver's license class reducing the insurance rates
	activation of existing but deactivated parts of the engine control	improved power, torque and higher engine speed by altered ignition timing	By-passing the driver's license class reducing the insurance rates
	alteration of valve lift and timing with altered camshaft	increased power and torque by improved charge exchange	By-passing the driver's license class reducing the insurance rates
Crankshaft	higher engine speed by replacement or alteration of crankshaft	increased power with higher engine speed	By-passing the driver's license class reducing the insurance rates

	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EEC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	technical aims of the manipulation	reasons for the manipulation
Manipulation of the transmission			
Variomatic	alteration of the transmission ratio by replacement or removing limiters	increased speed with altered transmission ratio	By-passing the driver's license class reducing the insurance rates
	alteration of the speeds for gear change by manipulation of the centrifugal controller	increased speed with altered transmission ratio	By-passing the driver's license class reducing the insurance rates
gear box	opening up blocked gears (6th gear)	increased speed with altered transmission ratio	By-passing the driver's license class reducing the insurance rates
chain-transmission	alteration of the transmission ratio by replacing pinion and / or sprocket	increased speed with altered transmission ratio	By-passing the driver's license class reducing the insurance rates

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
2 wheeled mopeds L1e or A (≤ 50 ccm / ≤ 45km/h) (also applicable for L4e)	**Manipulation of the engine**										
	Cylinder	altering charge ports to change timing (2-stroke)	none	me-dium	high	high	X	X	X	X	X
		polishing the charge ports	none	high	high	small		X			X
		Increase swept volume by re-bore or change of cylinder	high	me-dium	small	high	X	X	X	X	X
	Carburation	adjusted fuel flow with altered main jet	me-dium	small	small	high	X	X	X	X	X
		removal of throttle stops	small	small	small	high	X	X	X	X	X
		replacement of carburettor	high	me-dium	small	me-dium	X	X	X	X	X
	Intake system / intake port / intake manifold	polishing the intake	none	high	me-dium	small		X			X
		removing or replacing the air filter material	none	small	small	small		X			X
		increased manifold diameter	none	high	small	me-dium	X	X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
2 wheeled mopeds L1e or A (≤ 50 ccm / ≤ 45km/h) (also applicable for L4e)	Exhaust system	alteration of the exhaust diameter by replacement	me-dium	me-dium	small	me-dium	X	X	X	X	X
		alteration of resonance exhaust system	high	small	high	me-dium	X	X	X	X	X
		removing throttles	none	me-dium	small	high	X	X	X	X	X
	Engine control system	alteration of the engine ECU by additional ECUs	high	small	small	high	X	X	X	X	X
		removal of the speed limiter by removing the throttle Stop	none	small	small	high	X	X	X	X	X
		replacement of ECU	high	small	small	high	X	X	X	X	X
		reprogramming ECU	none	me-dium	high	high	X	X	X	X	X
		removing ECUs which limit engine speed	none	small	small	high	X	X	X	X	X
		activation of existing but deactivated parts of the engine control	none	small	me-dium	high	X	X	X	X	X
		alteration of valve lift and timing with altered camshaft (4-stroke)	high	high	high	high	X	X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
2 wheeled mopeds L1e or A (≤ 50 ccm / ≤ 45km/h) (also applicable for L4e)	Crankshaft	higher engine speed by replacement or alteration of crankshaft	high	high	high	high	X	X	X	X	X
	Manipulation of the Transmission										
	Variomatic	alteration of the transmission ratio by replacement or removing limiters	none	me-dium	small	high	X	X	X	X	X
		alteration of the speeds for gear change by manipulation of the centrifugal controller	none	small	me-dium	small	X	X	X	X	X
	gear box	opening up blocked gears (6th gear)	none	me-dium	me-dium	high	X		X	X	
	chain-transmission	alteration of the transmission ratio by replacing pinion and / or sprocket	me-dium	small	me-dium	high	X	X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
2 wheeled mopeds L3e or B (≤ 125 ccm / > 45km/h / ≤ 11 kW) (also applicable for L4e)	**Manipulation of the engine**										
	Cylinder	altering charge ports to change timing (2-stroke)	none	me-dium	high	high	X	X	X	X	X
		polishing the charge ports	none	high	high	small		X			X
		Increase swept volume by re-bore or change of cylinder	high	me-dium	small	high	X	X	X	X	X
	Carburation	adjusted fuel flow with altered main jet	me-dium	small	small	high	X	X	X	X	X
		removal of throttle stops	small	small	small	high	X	X	X	X	X
		replacement of carburettor	high	me-dium	small	me-dium	X	X	X	X	X
	Intake system / intake port / intake manifold	polishing the intake	none	high	me-dium	small		X			X
		removing or replacing the air filter material	none	small	small	small		X			X
		increased manifold diameter	none	high	small	me-dium	X	X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
2 wheeled mopeds L3e or B (≤ 125 ccm / > 45km/h / ≤ 11 kW) (also applicable for L4e)	Exhaust system	alteration of the exhaust diameter by replacement	me-dium	me-dium	small	me-dium	X	X	X	X	X
		alteration of resonance exhaust system	high	small	high	me-dium	X	X	X	X	X
		removing throttles	none	me-dium	small	high	X	X	X	X	X
	Engine control system	alteration of the engine ECU by additional ECUs	high	small	small	high	X	X	X	X	X
		removal of the speed limiter by removing the throttle Stop	none	small	small	high	X	X	X	X	X
		replacement of ECU	high	small	small	high	X	X	X	X	X
		reprogramming ECU	none	me-dium	high	high	X	X	X	X	X
		removing ECUs which limit engine speed	none	small	small	high	X	X	X	X	X
		activation of existing but deactivated parts of the engine control	none	small	me-dium	high	X	X	X	X	X
		alteration of valve lift and timing with altered camshaft (4-stroke)	high	high	high	high	X	X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
2 wheeled mopeds L3e or B (≤ 125 ccm / > 45km/h / ≤ 11 kW) (also applicable for L4e)	Crankshaft	higher engine speed by replacement or alteration of crankshaft	high	high	high	high	X	X	X	X	X
	Manipulation of the Transmission										
	Variomatic	alteration of the transmission ratio by replacement or removing limiters	none	me-dium	small	high	X	X	X	X	X
		alteration of the speeds for gear change by manipulation of the centrifugal controller	none	small	me-dium	small	X	X	X	X	X
	gear box	opening up blocked gears (6th gear)	none	me-dium	me-dium	high	X		X	X	
	chain-transmission	alteration of the transmission ratio by replacing pinion and / or sprocket	me-dium	small	me-dium	high	X	X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
2 wheeled motorcycles L3e or C (> 50 ccm / > 45km/h / ≤ 25 kW) (also applicable for L4e)	**Manipulation of the engine**										
	Cylinder	altering charge ports to change timing (2-stroke)	none	me-dium	high	high	X	X	X	X	X
		polishing the charge ports	none	high	high	small		X			X
		Increase swept volume by re-bore or change of cylinder	high	me-dium	small	high	X	X	X	X	X
	Carburation	adjusted fuel flow with altered main jet	me-dium	small	small	high	X	X	X	X	X
		removal of throttle stops	small	small	small	high	X	X	X	X	X
		replacement of carburettor	high	me-dium	small	me-dium	X	X	X	X	X
	Intake system / intake port / intake manifold	polishing the intake	none	high	me-dium	small		X			X
		removing or replacing the air filter material	none	small	small	small		X			X
		increased manifold diameter	none	high	small	me-dium	X	X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
2 wheeled motorcycles L3e or C (> 50 ccm / > 45km/h / ≤ 25 kW) (also applicable for L4e)	Exhaust system	alteration of the exhaust diameter by replacement	me-dium	me-dium	small	me-dium	X	X	X	X	X
		alteration of resonance exhaust system	high	small	high	me-dium	X	X	X	X	X
		removing throttles	none	me-dium	small	high	X	X	X	X	X
	Engine control system	alteration of the engine ECU by additional ECUs	high	small	small	high	X	X	X	X	X
		removal of the speed limiter by removing the throttle Stop	none	small	small	high	X	X	X	X	X
		replacement of ECU	high	small	small	high	X	X	X	X	X
		reprogramming ECU	none	me-dium	high	high	X	X	X	X	X
		removing ECUs which limit engine speed	none	small	small	high	X	X	X	X	X
		activation of existing but deactivated parts of the engine control	none	small	me-dium	high	X	X	X	X	X
		alteration of valve lift and timing with altered camshaft (4-stroke)	high	high	high	high	X	X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
2 wheeled motorcycles L3e or C (> 50 ccm / > 45km/h / ≤ 25 kW) (also applicable for L4e)	Crankshaft	higher engine speed by replacement or alteration of crankshaft	high	high	high	high	X	X	X	X	X
	Manipulation of the Transmission										
	Variomatic	alteration of the transmission ratio by replacement or removing limiters	none	me-dium	small	high		X	X	X	X
		alteration of the speeds for gear change by manipulation of the centrifugal controller	none	small	me-dium	small		X	X	X	X
	gear box	opening up blocked gears (6th gear)	none	me-dium	me-dium	high			X	X	
	chain-transmission	alteration of the transmission ratio by replacing pinion and / or sprocket	me-dium	small	me-dium	high		X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
2 wheeled motorcycles L3e or D (> 50 ccm / > 45km/h) (also applicable for L4e)	**Manipulation of the engine**										
	Cylinder	altering charge ports to change timing (2-stroke)	none	me-dium	high	high		X	X	X	X
		polishing the charge ports	none	high	high	small		X			X
		Increase swept volume by re-bore or change of cylinder	high	me-dium	small	high		X	X	X	X
	Carburation	adjusted fuel flow with altered main jet	me-dium	small	small	high		X	X	X	X
		removal of throttle stops	small	small	small	high		X	X	X	X
		replacement of carburettor	high	me-dium	small	me-dium		X	X	X	X
	Intake system / intake port / intake manifold	polishing the intake	none	high	me-dium	small		X			X
		removing or replacing the air filter material	none	small	small	small		X			X
		increased manifold diameter	none	high	small	me-dium		X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
2 wheeled motorcycles L3e or D (> 50 ccm / > 45km/h) (also applicable for L4e)	Exhaust system	alteration of the exhaust diameter by replacement	me-dium	me-dium	small	me-dium		X	X	X	X
		alteration of resonance exhaust system	high	small	high	me-dium		X	X	X	X
		removing throttles	none	me-dium	small	high		X	X	X	X
	Engine control system	alteration of the engine ECU by additional ECUs	high	small	small	high		X	X	X	X
		removal of the speed limiter by removing the throttle Stop	none	small	small	high		X	X	X	X
		replacement of ECU	high	small	small	high		X	X	X	X
		reprogramming ECU	none	me-dium	high	high		X	X	X	X
		removing ECUs which limit engine speed	none	small	small	high		X	X	X	X
		activation of existing but deactivated parts of the engine control	none	small	me-dium	high		X	X	X	X
		alteration of valve lift and timing with altered camshaft (4-stroke)	high	high	high	high		X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
2 wheeled motorcycles L3e or D (> 50 ccm / > 45km/h) (also applicable for L4e)	Crankshaft	higher engine speed by replacement or alteration of crankshaft	high	high	high	high		X	X	X	X
	Manipulation of the Transmission										
	Variomatic	alteration of the transmission ratio by replacement or removing limiters	none	me-dium	small	high		X	X	X	X
		alteration of the speeds for gear change by manipulation of the centrifugal controller	none	small	me-dium	small		X	X	X	X
	gear box	opening up blocked gears (6th gear)	none	me-dium	me-dium	high			X	X	
	chain-transmission	alteration of the transmission ratio by replacing pinion and / or sprocket	me-dium	small	me-dium	high		X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
three wheeled mopeds L2e (≤ 50 ccm / ≤ 45km/h)	**Manipulation of the engine**										
	Cylinder	altering charge ports to change timing (2-stroke)	none	me-dium	high	high	X	X	X	X	X
		polishing the charge ports	none	high	high	small		X			X
		Increase swept volume by re-bore or change of cylinder	high	me-dium	small	high	X	X	X	X	X
	Carburation	adjusted fuel flow with altered main jet	me-dium	small	small	high	X	X	X	X	X
		removal of throttle stops	small	small	small	high	X	X	X	X	X
		replacement of carburettor	high	me-dium	small	me-dium	X	X	X	X	X
	Intake system / intake port / intake manifold	polishing the intake	none	high	me-dium	small		X			X
		removing or replacing the air filter material	none	small	small	small		X			X
		increased manifold diameter	none	high	small	me-dium	X	X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
three wheeled mopeds L2e (≤ 50 ccm / ≤ 45km/h)	Exhaust system	alteration of the exhaust diameter by replacement	me-dium	me-dium	small	me-dium	X	X	X	X	X
		alteration of resonance exhaust system	high	small	high	me-dium	X	X	X	X	X
		removing throttles	none	me-dium	small	high	X	X	X	X	X
	Engine control system	alteration of the engine ECU by additional ECUs	high	small	small	high	X	X	X	X	X
		removal of the speed limiter by removing the throttle Stop	none	small	small	high	X	X	X	X	X
		replacement of ECU	high	small	small	high	X	X	X	X	X
		reprogramming ECU	none	me-dium	high	high	X	X	X	X	X
		removing ECUs which limit engine speed	none	small	small	high	X	X	X	X	X
		activation of existing but deactivated parts of the engine control	none	small	me-dium	high	X	X	X	X	X
		alteration of valve lift and timing with altered camshaft (4-stroke)	high	high	high	high	X	X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
three wheeled mopeds L2e (≤ 50 ccm / ≤ 45km/h)	Crankshaft	higher engine speed by replacement or alteration of crankshaft	high	high	high	high	X	X	X	X	X
	Manipulation of the Transmission										
	Variomatic	alteration of the transmission ratio by replacement or removing limiters	none	me-dium	small	high	X	X	X	X	X
		alteration of the speeds for gear change by manipulation of the centrifugal controller	none	small	me-dium	small	X	X	X	X	X
	gear box	opening up blocked gears (6th gear)	none	me-dium	me-dium	high	X		X	X	
	chain-transmission	alteration of the transmission ratio by replacing pinion and / or sprocket	me-dium	small	me-dium	high	X	X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
three wheeled motor vehicles L5e (> 50 ccm / > 45km/h)	**Manipulation of the engine**										
	Cylinder	altering charge ports to change timing (2-stroke)	none	me-dium	high	high		X	X	X	X
		polishing the charge ports	none	high	high	small		X			X
		Increase swept volume by re-bore or change of cylinder	high	me-dium	small	high		X	X	X	X
	Carburation	adjusted fuel flow with altered main jet	me-dium	small	small	high		X	X	X	X
		removal of throttle stops	small	small	small	high		X	X	X	X
		replacement of carburettor	high	me-dium	small	me-dium		X	X	X	X
	Intake system / intake port / intake manifold	polishing the intake	none	high	me-dium	small		X			X
		removing or replacing the air filter material	none	small	small	small		X			X
		increased manifold diameter	none	high	small	small		X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
three wheeled motor vehicles L5e (> 50 ccm / > 45km/h)	Exhaust system	alteration of the exhaust diameter by replacement	me-dium	me-dium	small	me-dium		X	X	X	X
		alteration of resonance exhaust system	high	small	high	me-dium		X	X	X	X
		removing throttles	none	me-dium	small	high		X	X	X	X
	Engine control system	alteration of the engine ECU by additional ECUs	high	small	small	high		X	X	X	X
		removal of the speed limiter by removing the throttle Stop	none	small	small	high		X	X	X	X
		replacement of ECU	high	small	small	high		X	X	X	X
		reprogramming ECU	none	me-dium	high	high		X	X	X	X
		removing ECUs which limit engine speed	none	small	small	high		X	X	X	X
		activation of existing but deactivated parts of the engine control	none	small	me-dium	high		X	X	X	X
		alteration of valve lift and timing with altered camshaft (4-stroke)	high	high	high	high		X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
three wheeled motor vehicles L5e (> 50 ccm / > 45km/h)	Crankshaft	higher engine speed by replacement or alteration of crankshaft	high	high	high	high		X	X	X	X
	Manipulation of the Transmission										
	Variomatic	alteration of the transmission ratio by replacement or removing limiters	none	me-dium	small	high		X	X	X	X
		alteration of the speeds for gear change by manipulation of the centrifugal controller	none	small	me-dium	small		X	X	X	X
	gear box	opening up blocked gears (6th gear)	none	me-dium	me-dium	high			X	X	
	chain-transmission	alteration of the transmission ratio by replacing pinion and / or sprocket	me-dium	small	me-dium	high		X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
4 wheeled light motor vehicles L6e (≤ 50 ccm / ≤ 45km/h)	**Manipulation of the engine**										
	Cylinder	altering charge ports to change timing (2-stroke)	none	me-dium	high	high	X	X	X	X	X
		polishing the charge ports	none	high	high	small		X			X
		Increase swept volume by re-bore or change of cylinder	high	me-dium	small	high	X	X	X	X	X
	Carburation	adjusted fuel flow with altered main jet	me-dium	small	small	high	X	X	X	X	X
		removal of throttle stops	small	small	small	high	X	X	X	X	X
		replacement of carburettor	high	me-dium	small	me-dium	X	X	X	X	X
	Intake system / intake port / intake manifold	polishing the intake	none	high	me-dium	small		X			X
		removing or replacing the air filter material	none	small	small	small		X			X
		increased manifold diameter	none	high	small	me-dium	X	X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
4 wheeled light motor vehicles L6e (≤ 50 ccm / ≤ 45km/h)	Exhaust system	alteration of the exhaust diameter by replacement	me-dium	me-dium	small	me-dium	X	X	X	X	X
		alteration of resonance exhaust system	high	small	high	me-dium	X	X	X	X	X
		removing throttles	none	me-dium	small	high	X	X	X	X	X
	Engine control system	alteration of the engine ECU by additional ECUs	high	small	small	high	X	X	X	X	X
		removal of the speed limiter by removing the throttle Stop	none	small	small	high	X	X	X	X	X
		replacement of ECU	high	small	small	high	X	X	X	X	X
		reprogramming ECU	none	me-dium	high	high	X	X	X	X	X
		removing ECUs which limit engine speed	none	small	small	high	X	X	X	X	X
		activation of existing but deactivated parts of the engine control	none	small	me-dium	high	X	X	X	X	X
		alteration of valve lift and timing with altered camshaft (4-stroke)	high	high	high	high	X	X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
4 wheeled light motor vehicles L6e (≤ 50 ccm / ≤ 45km/h)	Crankshaft	higher engine speed by replacement or alteration of crankshaft	high	high	high	high	X	X	X	X	X
	Manipulation of the Transmission										
	Variomatic	alteration of the transmission ratio by replacement or removing limiters	none	me-dium	small	high	X	X	X	X	X
		alteration of the speeds for gear change by manipulation of the centrifugal controller	none	small	me-dium	small	X	X	X	X	X
	gear box	opening up blocked gears (6th gear)	none	me-dium	me-dium	high	X		X	X	
	chain-transmission	alteration of the transmission ratio by replacing pinion and / or sprocket	me-dium	small	me-dium	high	X	X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
4 wheeled motor vehicles L7e (> 50 ccm / > 45km/h / ≤ 15 kW)	**Manipulation of the engine**										
	Cylinder	altering charge ports to change timing (2-stroke)	none	me-dium	high	high	X	X	X	X	X
		polishing the charge ports	none	high	high	small		X			X
		Increase swept volume by re-bore or change of cylinder	high	me-dium	small	high	X	X	X	X	X
	Carburation	adjusted fuel flow with altered main jet	me-dium	small	small	high	X	X	X	X	X
		removal of throttle stops	small	small	small	high	X	X	X	X	X
		replacement of carburettor	high	me-dium	small	me-dium	X	X	X	X	X
	Intake system / intake port / intake manifold	polishing the intake	none	high	me-dium	small		X			X
		removing or replacing the air filter material	none	small	small	small		X			X
		increased manifold diameter	none	high	small	me-dium	X	X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
4 wheeled motor vehicles L7e (> 50 ccm / > 45km/h / ≤ 15 kW)	Exhaust system	alteration of the exhaust diameter by replacement	me-dium	me-dium	small	me-dium	X	X	X	X	X
		alteration of resonance exhaust system	high	small	high	me-dium	X	X	X	X	X
		removing throttles	none	me-dium	small	high	X	X	X	X	X
	Engine control system	alteration of the engine ECU by additional ECUs	high	small	small	high	X	X	X	X	X
		removal of the speed limiter by removing the throttle Stop	none	small	small	high	X	X	X	X	X
		replacement of ECU	high	small	small	high	X	X	X	X	X
		reprogramming ECU	none	me-dium	high	high	X	X	X	X	X
		removing ECUs which limit engine speed	none	small	small	high	X	X	X	X	X
		activation of existing but deactivated parts of the engine control	none	small	me-dium	high	X	X	X	X	X
		alteration of valve lift and timing with altered camshaft (4-stroke)	high	high	high	high	X	X	X	X	X

Vehicle class	Component	available products for the manipulation of 2 and 3 wheeled motor vehicles according to directive 92/61/EC or 2002/24/EC respectively in connection with 97/24/EC, chapter 7	effort			efficiency of the manipulation	Influence of the manipulation on:				
			material	working time	knowledge		category of vehicle acc. to type approval directive 2002/24/EC	noise level acc. to 97/24/EC chap. 9	brakes acc. to 93/14/EEC	tyres. acc. to 97/24/EC chap.1	emissions acc. to 97/24/EC chap. 5
4 wheeled motor vehicles L7e (> 50 ccm / > 45km/h / ≤ 15 kW)	Crankshaft	higher engine speed by replacement or alteration of crankshaft	high	high	high	high	X	X	X	X	X
	Manipulation of the Transmission										
	Variomatic	alteration of the transmission ratio by replacement or removing limiters	none	me-dium	small	high		X	X	X	X
		alteration of the speeds for gear change by manipulation of the centrifugal controller	none	small	me-dium	small		X	X	X	X
	gear box	opening up blocked gears (6th gear)	none	me-dium	me-dium	high			X	X	
	chain-transmission	alteration of the transmission ratio by replacing pinion and / or sprocket	me-dium	small	me-dium	high		X	X	X	X

10.2. Ownership tax

Country	Tax denomination	Reference parameter	PTWs subject to	Annual amount due	Payable by Instalments
AUSTRIA	Motorbezogene Versicherungssteuer	ED	with ED >100cc	The tax amount is calculated in ATS. multiplying the PTW ED by the number of months paid (1, 3, 6, 12) and by a particular coefficient. See the following table.	Yes
BELGIUM	Taxe de circulation Verkeersbelasting	ED	with ED >250cc	41.22 €	No
FRANCE	None		None		No
GERMANY	Kraftfahrzuegsteur	ED	with ED >50cc	0.184 € due each 25cc of PTW ED per year	No
ITALY	Tassa di proprietà	ED and FP (starting 1998 will used the EP)	All PTWs	See the following table	No
NETHERLANDS	Motorrijtuig-belasting	None	All Motorcycles Mopeds are excluded	54 € annually 27 € per 3-months	Yes
SPAIN	Impuesto sobre Vehiculos de Traccion Mecanica	ED	All Motorcycles	See the following table	No
SWEDEN	Vägskatt	ED	All motorcycles	150	17
UNITED KINGDOM	Vehicle Excise Duty	ED		See the following table	Yes, for PTW with ED >250cc

10.3.1 Ownership tax in Italy, Spain and UK

Spain Impuesto sobre Vehiculos de Traccion Mecanica			United Kingdom Vehicle Excise Duty		
Category of PTW ED	Annual minimum amount (in €)	Annual amount for the city of Madrid (in €)	Category of PTW ED	Annual Amount (GBP)	6-months Amount (GBP)
ED < 125cc	4.42	5.98	ED ≤150cc	15	
150cc< ED ≤250cc	7.57	10.28	150cc< ED ≤400	30	
250cc < ED ≤500cc	15.15	20.52	400 cc<ED<600	45	
500cc < ED ≤1000cc	30.29	41.02	All other motorcycle	60	33
ED >1000cc	60.58	82.13			

Italy Tassa di proprietà		Austria Motorbezogene Versicherungssteuer		
Category of PTW ED and Fiscal Power	Annual amount due (€)	Category of PTW ED and Fiscal Power	Period paid (number of months)	Coefficient
ED ≤50cc	19.1	ED≤50cc	1	0.22
EP ≤ 11Kw	19.1	ED≤125cc	4	0.216
EP > 11Kw	Tax (€) = 19.1 + 0.878 ∗ EP (Kw)	FP≤3FHp and ED≤150cc	6	0.212
		FP≤3FHp and ED>150cc	12	0.2
		3<FP≤ 6 FHp		
		FP> 6FHp		

8.1 Annual insurance cost by model and country

Country	Models of PTW														
	Piaggio Vespa ET2 50			Piaggio Vespa ET4 125			Yamaha XT 600 E			Honda CBR 600 F			Honda CBR 900 RR		
	Euro														
AUSTRIA[iii]	124.4	135.1	155.1	98.8	88.7	109.4	340.6	435.1	376.8	340.6	435.1	376.8	620.3	520.6	428.7
BELGIUM			123.8			329.8			663.2			663.2			663.2
FRANCE [iv]	235.2	423.8		185.5	512.5		228.5	557.6		380.2	1335.6		380.2	1728	
GERMANY			50.0			120.0			130-168			204-273			303-405
NETHERLANDS			240			240			122.61			122.61			129.67
ITALY			350			440			650			650			650
SPAIN			540 - 720			600			720			1500			1500
UNITED KINGDOM	240 469 £			280- 550£			190- 352 £			260- 476 £			470- 949 £		

8.1.1. Indicative annual insurance cost by model and country[v] in Austria[vi]

Model of PTW	Rider's data	Annual insurance premium		Total taxes	Total insurance annual cost
		Company	Tariff		
			Euros		
Piaggio Vespa ET2 50	-male -16 years old -new moped driving licence owner	A			125.65
		B			136.4
		C			156.57
Piaggio Vespa ET4 125	-male -18 years old -new motorcycle driving licence owner	A	77.97	21.8	99.77
		B	67.73	21.8	89.53
		C	88.66	21.8	110.46
Yamaha XT 600 E	-male -25 years old -3 years of motorcycle driving licence possess	A	239.31	104.65	343.96
		B	334.73	104.65	439.37
		C	275.88	104.65	380.52
Honda CBR 600 F	-male -25 years old -3 years of motorcycle driving licence possess	A	239.31	104.65	343.96
		B	334.73	104.65	439.37
		C	275.88	104.65	380.52
Honda CBR 900 RR	-male -25 years old -3 years of motorcycle driving licence possess	A	469.39	156.97	626.37
		B	368.66	156.97	525.64
		C	275.88	156.97	432.83

8.1.2. Indicative annual insurance cost by model and country in Belgium

Model of PTW	Rider's data	Annual insurance premium	Total taxes	Total insurance annual cost
		National currency		
Piaggio Vespa ET2 50	-male -16 years old -new moped driving licence owner	3969	1072	5041
Piaggio Vespa ET4 125	-male -18 years old -new motorcycle driving licence owner	10572	2855	13427
Yamaha XT 600 E	-male -25 years old -3 years of motorcycle driving licence possess	21261	5741	27002
Honda CBR 600 F	-male -25 years old -3 years of motorcycle driving licence possess	21261	5741	27002
Honda CBR 900 RR	-male -25 years old -3 years of motorcycle driving licence possess	21261	5741	27002

8.1.3. Indicative annual insurance cost by model and country in France

Model of PTW	Rider's data	Annual insurance premium	Total taxes	Total insurance annual cost
		National currency		
Piaggio Vespa ET2 50	-male -16 years old -new moped driving licence owner	1959	647	2606
Piaggio Vespa ET4 125	-male -18 years old -new motorcycle driving licence owner	2716	897	3613
Yamaha XT 600 E	-male -25 years old -3 years of motorcycle driving licence possess	4769	1573	6343
Honda CBR 600 F	-male -25 years old -3 years of motorcycle driving licence possess	11451	3779	15231
Honda CBR 900 RR	-male -25 years old -3 years of motorcycle driving licence possess	11451	3779	15231

8.1.4. Indicative annual insurance cost by model and country in Germany[vii]

Model of PTW	Rider's data	Annual insurance premium	Total taxes	Total insurance annual cost
		Euro		
Piaggio Vespa ET2 50	-male -16 years old -new moped driving licence owner (100%)	50	free	50
Piaggio Vespa ET4 125	-male -18 years old -new motorcycle driving licence owner (100%)	120	free	120
Yamaha XT 600 E	-male -25 years old -3 years of motorcycle driving licence possess (70%)	125 87,5	43.2	168.2 130.7
Honda CBR 600 F	-male -25 years old -3 years of motorcycle driving licence possess (70%)	161 230	43.2	181.2 273.2
Honda CBR 900 RR	-male -25 years old -3 years of motorcycle driving licence possess (70%)	340 238	65	405 303

8.1.5. Indicative annual insurance cost by model and country in Italy

Model of PTW	Rider's data	Annual insurance premium	Total taxes	Total insurance annual cost
		Euros		
Piaggio Vespa ET2 50	-male -16 years old	280	70	350
Piaggio Vespa ET4 125	-male -18 years old -new motorcycle driving licence owner	350	90	440
Yamaha XT 600 E	-male -25 years old -3 years of motorcycle driving licence possess	515	135	650
Honda CBR 600 F	-male -25 years old -3 years of motorcycle driving licence possess	515	135	650
Honda CBR 900 RR	-male -25 years old -3 years of motorcycle driving licence possess	515	135	650

8.1.6. Indicative annual insurance cost by model and country in the Netherlands

Model of PTW	Rider's data	Annual insurance premium	Total taxes	Total insurance annual cost
		€		
Piaggio Vespa ET2 50	-male -16 years old -new moped driving licence owner	223.2	16.80	240
Piaggio Vespa ET4 125	-male -18 years old -new motorcycle driving licence owner	223.2	16.80	240
Yamaha XT 600 E	-male -25 years old -3 years of motorcycle driving licence possess	110.35	12.26	122.61
Honda CBR 600 F	-male -25 years old -3 years of motorcycle driving licence possess	110.35	12.26	122.61
Honda CBR 900 RR	-male -25 years old -3 years of motorcycle driving licence possess	120.59	9.08	129.67

8.1.7. Indicative annual insurance cost by model and country in Spain

Model of PTW	Rider's data	Annual insurance premium	Total taxes	Total insurance annual cost
				Euro
Piaggio Vespa ET2 50	-male -16 years old -new moped driving licence owner			540-720
Piaggio Vespa ET4 125	-male -18 years old -new motorcycle driving licence owner			600
Yamaha XT 600 E	-male -25 years old -3 years of motorcycle driving licence possess			720
Honda CBR 600 F	-male -25 years old -3 years of motorcycle driving licence possess			1500
Honda CBR 900 RR	-male -25 years old -3 years of motorcycle driving licence possess			1500

8.1.8.Indicative annual insurance cost by model and country in Sweden

Model of PTW	Rider's data	Annual insurance premium	Total taxes	Total insurance annual cost
		National currency		
Piaggio Vespa ET2 50	-male -16 years old -new moped driving licence owner	6000		6000
Piaggio Vespa ET4 125	-male -18 years old -new motorcycle driving licence owner	3600		3600
Yamaha XT 600 E	-male -25 years old -3 years of motorcycle driving license possess	3000		3000
Honda CBR 600 F	-male -25 years old -3 years of motorcycle driving license possess	16500		16500
Honda CBR 900 RR	-male -25 years old -3 years of motorcycle driving license possess	16500		16500

8.1.9. Indicative annual insurance cost by model and country in the United Kingdom

Model of PTW	Rider's data	Annual insurance premium	Total taxes	Total insurance annual cost
				£ Sterling
Piaggio Vespa ET2 50	-male -16 years old -new moped driving licence owner		5%	Low risk area £213[viii] High risk area £344
Piaggio Vespa ET4 125	-male -18 years old -new motorcycle driving licence owner		5%	Low risk area £259 High risk area £429
Yamaha XT 600 E	-male -25 years old -3 years of motorcycle driving licence possess		5%	Low risk area £151 High risk area £238
Honda CBR 600 F	-male -25 years old -3 years of motorcycle driving licence possess		5%	Low risk area £176 High risk area £281
Honda CBR 900 RR	-male -25 years old -3 years of motorcycle driving licence possess		5%	Low risk area £265 High risk area £470

11. PTW riding access: Mopeds

Country	Maximum design speed	Age of consent	Driving License						Passenger allowed	Mandatory helmet usage
			Requested	Released by	Theoretical test	Theoretical lessons	Practical test	Achievement cost		
AUSTRIA	45	15	Yes	Municipal police (moped card)	Yes	Yes	No	No	Yes, but the passenger's age must be ≤8 y.o	Yes
BELGIUM	45	16	Yes	Driving school	Yes	Yes	Yes	Yes	Yes, but the driver's age must be ≥18 y.o. for class A and B (mopeds)	Yes
	25	16	No		No	No	No	No	Yes	No
FRANCE	45	14	Yes	School	Yes	Yes	Yes(Brevet de Sécurité Routière)	Yes	Yes	Yes
GERMANY	45/50	16	Yes	Driving school	Yes	Yes	Yes	Yes	Yes	Yes
	25	15	Yes (Certificate)	School or Driving school	Yes	Yes	No	No	Yes, but the passenger's age must be ≤7 y.o and driver's age ≥16 y.o	Yes
	20	15	Yes (Certificate)	School or Driving school	Yes	Yes	No	No	No	No
ITALY	45	14	No						No	Yes
NETHERLANDS	45	16	Yes	Authorised body (CBR)	Yes	No	No	Yes 27.45€ / 13.50€	Yes	Yes
	25	16	Yes		Yes	No	No	Yes 27.45€ / 13.50€	Yes	No
SPAIN	45	14	Yes	Driving School or Official Traffic centre	Yes	Yes	No	Yes	Yes, but rider must be older than 16	Yes
SWEDEN	45	15	Certificate or any license ➠April 1, 2000 no more request	Authorised body	Yes	Yes	No	No	Yes, but the passenger's age must be ≤8 y.o (new mopeds approved for passenger: Yes)	
	25	15		-	-	-	-	-		
UNITED KINGDOM	45	16	Yes	Driving school	Yes	Yes	Yes	Yes	Yes	Yes

12. PTW riding access: Motorcycle

Country[xii]	Driving License category	Minimum age	Achievement cost	Renewal	Tax on DL possess	
				Frequency	cost	
AUSTRIA	A	18	654 €		None	
	A1/B	23	1200 € (A+B 1600 €)		None	
BELGIUM	A	18	372 - 545 €	Never	None	
FRANCE	A 1	16	About 716 €	Never	None	
GERMANY	A1	16	1000 €	Never	None	
	A	18	1250 €	Never	None	
ITALY	A1	16	About 516 €	every 10 years	None	
	A	18	About 516 €	every 10 years	None	
	A1/B	18	About 516 €	every 10 years	None	
NETHERLANDS	A	18	1125	every 10 years	27-40.9 €	40.9 € (just once)
SPAIN	A1	16	60000ESP (during 1998 will become more expensive)	-every 10 years for holders younger than 45 -every 5 years if holder is between 45 and 70 -every 2 years for holders older than 70	36 €	None
	A	18			36 €	None
SWEDEN	A1	18	9.000 SEK			None
UNITED KINGDOM	A1	17	21GBP (for provisional license)	only when the rider become 70 y.o.	6GBP	None
	A	17				None

12.1 PTW riding access: highest performances motorcycles

Country	Driving license category	Minimum age or minimum DL possess requested	Motorcycles with the highest performances	Note
AUSTRIA	A	18	Motorcycle with EP≤ 25kW and P/W ratio≤0.16kW/kg	After 2 years of probation the unrestricted DL Cat A is directly achieved
	A	21 y. o. or at least after 2 years of restricted DL Cat. A possess	All the motorcycles without any restriction	2 years of probation are also requested for a rider that has already had 2 years of probation for the restricted Cat A DL
	B	23	A1-Motorcycles	At least 5 years of Cat.B DL possess are requested and must be proved the holder have had 6 hours of motorcycle riding practice
BELGIUM	A	18	Motorcycles with EP≤ 25kW or P/W ratio≤0.16kW/kg	
	A	21 y. o. or at least after 2 years of restricted DL Cat. A possess	All the motorcycles without any restriction	
	B	**20**	A1-Motorcycles	All the car DL issued after 1/1/1989, after a minimum period of possess of 2 years allows to ride an A1-Motorcycle without any exam.
FRANCE	A1	16	A1-Motorcycles	Only for 16 and 17 y.o. rider
	A	18	Motorcycles with EP≤ 25kW and P/W ratio≤0.16kW/kg	
	A	21 y. o. or at least after 2 years of restricted DL Cat. A possess	All the motorcycles without any restriction	
	B	20	A1-Motorcycles	Before ride A1-Motorcycles, at least, 2 years of DL Cat.B possess must be passed
GERMANY	A1	16	A1-Motorcycles	Till the age of 16/17 the motorcycle used must have design speed not exceeding 80km/h. After that age no speed limit
	A (limit)	18	Max ED-power 25kw, max relation power/weight 0.16kw/kg	Everybody older than 18 to access to unlimited EP motorcycle must hold the DL for at least 2 years. After 2 years the limit is automatically dissolved.
	A	20	No limit	Direct access starts at the age of 25.
ITALY	A1	16	A1-Motorcycles	Only for 16 and 17 y.o. rider
	A	18	Motorcycle with EP≤ 25kW and P/W ratio≤0.16kW/kg	
	A	21 y.o. or at least after 2 years of restricted DL Cat. A possess[xiii]	All the motorcycles without any restriction	For new DL holder the practical test must be taken on a motorcycle with EP >35kW
	A1/B	18	A1-Motorcycles	

9.3 Roadworthiness test

Country	Roadworthiness test	Frequency	Cost EURO (approximate)
AUSTRIA	Yes	Every year	7.2-36
BELGIUM	None		
FRANCE	None		
GERMANY	Yes, only MC	Every 2 years	25.3
NETHERLANDS	None		
ITALY	Yes	For the first time 4 years after the first registration, successively every 2 years	
SPAIN	Yes	For the first time 5 years after the first registration, successively every 2 years	23.9
SWEDEN	Yes	Every year	27
UNITED KINGDOM	Yes	Every year after the first 3 years	17.9

Regulation	Title
92/61/EEC	Type-approval of two or three-wheel motor vehicles
2002/24/EC	Type-approval of two or three-wheel motor vehicles and repealing Council Directive 92/61/EEC
93/41/EEC	Braking of two or three-wheel motor vehicles
97/24/EC	Certain components or characteristics of two or three-wheel motor vehicles
97/24/EC, Chapter 1	Tyres for two or three wheel motor vehicles and their fitting
97/24/EC, Chapter 5	Measures to be taken against air pollution caused by two or three wheel motor vehicles
97/24/EC, Chapter 7	Anti-tampering measures for two-wheel mopeds and motorcycles
97/24/EC, Chapter 8	Eelectromagnetic compatibility of two or three wheel motor vehicles and electrical or electronic separate technical units
97/24/EC, Chapter 9	Permissible sound level and exchaust system of two or three wheel motor vehicles
91/439/EEC	Driving Licenses
96/96/EC	Roadworthiness tests for motor vehicles and their trailers
2000/30/EC	Technical roadside inspection of the roadworthiness of commercial vehicles circulating in the Community

Description and analysis of the different technical systems/measures against unauthorised manipulation

Explanations to the following table:

- Foot-notes

B only vehicles of class B according to 97/24/EC chapter 7

C,D only vehicles of class C, D according to 97/24/EC chapter 7

- Analysis

The analysis of the technical systems / measures against unauthorised manipulation follows the criteria:

Cost of the measure (as seen by the manufacturer)

- **Effort / implication of the measure**
- **Effectiveness of the measure**
  For example: parts for the manipulation are sold as after market parts
  For example: manipulation is only possible with special tools
- **Restrictions caused by the measure**
  For example: service and/or repair of the vehicle can be hampered by the use of special screws and tear off screws.
- **Recognition of the manipulation**
  For example: the manipulation is only recognisable after disassembly of vehicle parts and/or only recognisable by highly trained personnel

Manipulation of the Engine

Nature of manipulation in the area: **cylinder/piston**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Exchange of the unit cylinder/piston (increased swept volume) between approved vehicles	Cylinder/piston are not exchangeable between approved vehicles of one manufacturer. Prescribed marking of the parts / control plate.	No. 2.1 / 3.10	A, B	L1e, L3e[B]	**Cost of the measure** – Low cost **Effort / realisation of the measure** – Little effort **Effectiveness of the measure** – Manipulation is prevented. **Restrictions caused by the measure** – none **Identification of the measure** – Original part is marked (see control plate). **Remarks** – Constructive measures or technical requirements are not required in the vehicle classes L3e[C,D], L4e, L5e and L7e as the engine concepts differ. – Extension to vehicles of the classes L2e and L6e useful.

Nature of manipulation in the area: **cylinder/piston**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Exchange of the unit cylinder/piston (increased displacement) with after market parts	none	---	---	all	**Effort/ realisation of the measure** – No direct measures by the vehicle manufacturer are possible. **Effectiveness of the measure** – Manipulation possible **Identification of the measure** – Original part is marked in vehicle classes L1e and L3e^{B} (see control plate). – If the marking is faked (acc. to control plate), a manipulation is not to identify.
Re-bore the cylinder (increase swept volume)	None	---	---	all	**Method of manipulation is not applied any more.** The low wall thickness of the cylinders and the treatment of the cylinder wall (Nikasil) normally do not allow this manipulation. Re-boring the cylinder for an engine refit and using larger diameter pistons will not result in increased engine power or higher vehicle speed.

Nature of manipulation in the area: **cylinder/piston**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Installation of a thinner head gasket	The head gasket on vehicles of the classes A is max. 1.3 mm, and 1.6 mm for vehicles of the class B.	No. 3.1	A, B	L1e, L3e[B]	**Cost of the measure** – No additional cost **Effort / realisation of the measure** – No additional effort **Effectiveness of the measure** – Good effectiveness, as the thickness cannot be reduced further. – **no** manipulation possible **Restrictions caused by the measure** – none **Remarks** – Based on the technical conditions, constructive measures are not required in the vehicle classes L3e[C,D], L4e, L5e and L7e. – Extension to vehicle classes L2e and L6e useful.

Nature of manipulation in the area: **cylinder/piston**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Installation of thinner gasket between cylinder and crank case (on 2-stroke engines)	The gasket has a max. thickness of 0.5 mm.	No. 3.2	A, B	L1e, L3e[B]	**Cost of the measure** – No additional cost **Effort / realisation of the measure** – No additional effort **Effectiveness of the measure** – Good effectiveness, as the thickness cannot be reduced further. – **no** manipulation possible **Restrictions caused by the measure** – none **Remarks** – Based on the technical conditions, constructive measures are not required in the vehicle classes L3e[C,D], L4e, L5e and L7e. – Extension to vehicle classes L2e and L6e useful.
Polishing the scavenging ports	None	---	---	all	**Manipulation not applied any more.** Caused by the use of modern production technology, the surface quality of the scavenging ports is very high. Polishing the ports would not significantly increase the power output and is highly work intensive.

Nature of manipulation in the area: **cylinder/piston**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Turning the piston 180° (on 2-stroke engines)	Turning the piston has no influence to the power output and top speed at vehicle classes A and B. The pistons are designed symmetrically.	No. 3.4	A, B	L1e, L3e[B]	**Cost of the measure** – No additional cost **Effort / realisation of the measure** – No additional effort **Effectiveness of the measure** – Good effectiveness, **no** manipulation possible **Restrictions caused by the measure** – None **Identification of the manipulation** – Manipulation cannot be identified from the outside. **Remarks** – This manipulation is not relevant any more.

Nature of the manipulation in the area: **Crankshaft**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Machining or replacement of crankshaft	None	---	---	all	**This method of manipulation cannot be realised with simple measures.** The after-market offers fitting replacement parts, the manipulation can therefore not be prevented. The effort to replace the crankshaft is very high. Other parts of the drive-unit have to be replaced as well.

Nature of manipulation in the area: **Mixture formation**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Exchange of the carburettor between approved vehicles	Carburettors between approved vehicles of one manufacturer cannot be exchanged **or** differ insignificantly in their diameters. **or** the carburettor is tuned to the maximum engine performance. The replacement has therefore no significant influence on power output and top speed. Prescribed marking of the parts / control plate	No. 2.1 / 3.10	A, B	L1e, L3e[B]	**Cost of the measure** – little extra cost **Effort / realisation of the measure** – small effort **Effectiveness of the measure** – Manipulation is prevented. **Restrictions caused by the measure** – none **Identification of the manipulation** – Original part is marked (see control plate). **Remarks** – Extension to the vehicle classes L2e and L6e and L3e[C,D], L4e, L5e and L7e useful (see next point as well).

Nature of manipulation in the area: **Mixture formation**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Replacement of the carburettor with after market parts	Prescribed marking of the parts / control plate	No. 3.10	A, B	L1e, L3e[B]	**Cost of the measure** – Little cost **Effectiveness / realisation of the measure** – Direct measures by the vehicle manufacturer are not possible. **Effectiveness of the measure** – Manipulation possible **Identification of the manipulation** – The original part is marked (see control plate). – If the marking is faked (according to control plate) not recognisable. **Remark** – Extension to the vehicle classes L2e and L6e and L3e[C,D], L4e, L5e and L7e useful.

Nature of manipulation in the area: **Mixture formation**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Alteration of the carburettor setting for example by altering the main jets.	Alteration of the carburettor setting does not significantly alter the power output or top speed.	No. 2.2	A, B	L1e, L3e[B]	**Cost of the measure** – Little cost **Effort / realisation of the measure** – Small effort **Effectiveness of the measure** – Manipulation is possible, Parts are offered in the after market. – No significant increase of engine power is expected. **Restrictions caused by the measure** – none **Identification of the manipulation** – Manipulation cannot be identified from outside. **Remarks** – Extension to vehicle classes L2e and L6e useful. – According to the state of technology, this manipulation is hardly used on vehicle classes L3e[C,D], L4e, L5e and L7e.

Nature of manipulation in the area: **Mixture formation**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Removal of the throttle stop	No throttle stops are installed.	No. 3.7	A, B	L1e, L3e[B]	**Cost of the measure** – Little cost **Effort / realisation of the measure** – Small effort **Effectiveness of the measure** – **No** manipulation possible. **Restrictions caused by the measure** – none **Remark** – Extension to vehicles of all classes is useful (see next point).

Nature of manipulation in the area: **Mixture formation**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Removal of the throttle stop	None	---	---	L2e, L3e[C, D] L4e, L5e, L6e, L7e	**Effectiveness of the measure** – Manipulation possible! Throttle stops are easily removed! **Identification of the measure** – Manipulation can only be recognised by highly trained personnel. **Remarks** – Extension to vehicles of all classes useful. – Based on the existing power output limits for vehicles of the class L3e in France (72 kW) and Switzerland (78 kW), throttle stops are used in these countries to limit the engine power output.

Nature of manipulation in the area: **Mixture formation**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Exchange of the cylinder head between approved vehicles	The cylinder-heads of different approved vehicles of one manufacturer are not exchangeable **or** identical. Prescribed marking of parts / control plate	No. 2.1 / 3.10.	A, B	L1e, L3e[B]	**Cost of the measure** – little cost **Effort / realisation of the measure** – small effort **Effectiveness of the measure** – Manipulation is prevented. **Restrictions caused by the measure** – none **Identification of the measure** – Original part is marked (see control plate). **Remarks** – Extension to vehicles of classes L2e and L6e useful. – According to the state of technology, this manipulation is hardly used any more in the vehicle classes L3e[C,D], L4e, L5e and L7e.

Nature of manipulation in the area: **Mixture formation**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Replacement of the cylinder head with after market parts	Prescribed marking of parts / control plate	No. 3.10	A, B	L1e, L3e[B]	**Cost of the measure** – Small cost **Effort / realisation of the measure** – The vehicle manufacturer has no direct influence or measures. **Effectiveness of the measure** – Manipulations require high effort. **Identification of the manipulation** – Original part on vehicles of classes A and B is marked (see control plate). – When the marking is fraudulent (acc. to control plate) not to be identified. **Remarks** – Extension to vehicle classes L2e and L6e useful (see above). – According to the state of technology, this manipulation is hardly used in vehicle classes L3e[C,D], L4e, L5e and L7e (see above).

Nature of manipulation in the area: **Mixture formation**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Exchange of the intake pipe between approved vehicles	The intake pipes between approved vehicles of one manufacturer are not exchangeable. The exchange of intake pipes has no significant influence on power output and top speed. The intake pipes are connected with tear-off screws. Prescribed marking of parts / control plate	No. 2.1 / 3.10.	A, B	L1e, L3e[B]	**Cost of the measure** – Small cost **Effort / realisation of the measure** – Little effort **Effectiveness of the measure** – Manipulation is prevented. **Restrictions caused by the measure** – none **Identification of the manipulation** – Original part is marked (see control plate). **Remarks** – Extension to vehicle classes L2e und L6e useful. – The prescribed marking / control plate is useful for the classes L3e[C,D], L4e, L5e and L7e as well.
Increasing the intake diameter	Increasing the diameter of the intake does not significantly alter the power output and top speed **or**	No. 2.3	B	L3e[B]	**Cost of the measure** – Small cost **Effort / realisation of the measure** – Little effort

Nature of manipulation in the area: **Mixture formation**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Continued Increasing the intake diameter	the intake pipe contains a sleeve which is fastened to the engine block with tear-off screws or with special screws. The hardness of the sleeve is 60 HRC or more and the thickness at the narrow part is less than 4mm **or** the intake pipe is connected to the engine block by tear-off screws or by special screws. The thickness of the intake pipe at the narrow part is less than 4 mm if it is made from metal, or less than 5 mm if made from a flexible material, such as rubber **or** the part of the intake system with the smallest area is situated inside the cylinder head.				**Effectiveness of the measure** – Manipulation is prevented. **Restrictions caused by the measure** – none **Identification of the manipulation** – Original part is marked (see control plate). **Remarks** – Extension to vehicle class L2e und L6e useful.

Nature of manipulation in the area: **Mixture formation**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Polishing intake duct	none	---	---	all	**Manipulation is not applied any more.** Modern manufacturing technology results in good surface quality. No significant power increase can be expected by work intensive polishing the intake ducts.
Intake opening is covered by the piston in top dead centre (on two-stroke engines without membrane valve)	Pistons are designed that they do not cover the intake at top dead centre.	No. 3.3	A, B	L1e, L3e[B]	**Cost of the measure** – Little cost **Effort / realisation of the measure** – Small effort **Effectiveness of the measure** – No easy manipulation possible. **Restrictions caused by the measure** – none **Identification of the manipulation** – Manipulation cannot be seen from outside. **Remarks** – According to the state of technology, this manipulation is hardly used any more. – Extension for vehicle classes L2e und L6e useful.

Nature of manipulation in the area: **Mixture formation**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Remove the membrane valve (on two-stroke engines with membrane valve)	The membrane valve is installed with tear-off or special screws. The engine will not operate without the membrane valve(s).	No. 3.9	A, B	L1e, L3e[B]	**Cost of the measure** – little cost **Effort / realisation of the measure** – small effort **Effectiveness of the measure** – Easy manipulation is not possible. **Restrictions caused by the measure** – none **Identification of the measure** – Manipulation cannot be identified from outside. **Remarks** – According to the state of technology, this manipulation is hardly used. – Extension to vehicle classes L2e and L6e seems useful, as identical engines are used there.

Nature of manipulation in the area: **Mixture formation**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Removal of the air filter	Removing the air filter does not significantly alter power output and top speed.	No. 2.4	A, B	L1e, L3e[B]	**Effort / realisation of the measure** – small effort **Effectiveness of the measure** – Manipulation is still possible and cannot be stopped. – No significant increase of power output, but higher noise levels are expected. **Restrictions caused by the measure** – none **Identification of the measure** – Manipulation cannot be identified from outside. **Remarks** – The air – fuel mixture will be altered to lean mixture. This can result in excessive engine temperatures and the piston could seize. – Extension to vehicles of classes L2e and L6e useful.

Nature of manipulation in the area: **Mixture formation**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Replacement of the air filter with after market parts	Definite marking of the components	---	---	alll	**Cost of the measure** – small effort **Effort / realisation of the measure** – No influence by the vehicle manufacturer possible. **Effectiveness of the measure** – Manipulation is possible and cannot be prevented. – No increased power output but higher noise level expected. **Restrictions caused by the measure** – none **Identification of the measure** – Manipulation cannot be identified from outside. **Remarks** – The definite marking of the component allows a faster proof of manipulation as the marking can easily be checked.

Nature of manipulation in the area: **Mixture formation**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Removal / replacement of air filter system (intake silencer)	Prescribed marking of the components / control plate	No. 3.10	A, B	L1e, L3e[B]	**Cost of the measure** – little cost **Effort / realisation of the measure** – small effort **Effectiveness of the measure** – Manipulation is possible. – No increased power output but higher noise level expected. **Restrictions caused by the measure** – none **Identification of the measure** – Original part is marked at vehicles of classes A and B (see control plate). – Cannot be identified when marking is fraudulent (acc. to control plate). **Remarks** Extension to vehicles of all classes useful.

Nature of manipulation in the area: **exhaust system**	Technical systems/ measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Exchange of exhaust systems between approved vehicles (alteration of diameter and length)	The silencer systems of different approved vehicles of one manufacturer are not exchangeable (positioning and attachment of the silencers are different). Prescribed marking of parts / control plate	No. 2.1 / 3.10.	A, B	L1e, L3e[B]	**Cost of the measure** – little cost **Effort / realisation of the measure** – small effort **Effectiveness of the measure** – Manipulation is possible, parts are available as after market parts. **Restrictions caused by the measure** – none **Identification of the measure** – Original part is marked (see control plate). **Remarks** – Extension to vehicles of all classes useful (see next point).

Nature of manipulation in the area: **exhaust system**	Technical systems/ measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Exchange of silencer systems against after market parts	Marking of the silencer with approval sign	---	---	all	**Cost of the measure** – little cost **Effort / realisation of the measure** – small effort **Effectiveness of the measure** – Manipulation is possible. **Restrictions caused by the measure** – none **Identification of the measure** – Falsification of the approval sign is not easy to prove. – The approval sign does not show if the part is approved for the vehicle type where it is installed. **Remarks** – Further measures are suggested on the following page.

Nature of manipulation in the area: **exhaust system**	Technical systems/ measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Continued Exchange of silencer systems against after market parts	**Additional measures** Marking of the silencer and proof by the manufacturer for the vehicles for which the silencer can be used (for example in size of credit card) which has to be carried by the driver, alternatively the vehicle's documents could be altered to include the silencer.	---	---	all	**Cost of the measure** – little cost **Effort / realisation of the measure** – This measure would have to be integrated into the various national legislations. **Effectiveness of the measure** – Manipulation still possible by falsification of the marking or of the manufacturer's proof. **Restrictions caused by the measure** – Drivers have to carry the document of proof. **Identification of the measure** – Easy comparison of the document with the marking of the part. **Remark** – The introduction of a traceable marking on silencers is efficient for all vehicle classes.

Nature of manipulation in the area: **exhaust system**	Technical systems/ measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Alteration of the diameter in the exhaust system for example by removing a throttle	The alteration of the diameter in the exhaust system has no influence on the power output or the top speed. Two stroke and four stroke engines do not contain an artificial throttle. Prescribed marking of the components / control plate	No. 3.5	A, B	L1e, L3e[B]	**Cost of the measure** – little cost **Effort / realisation of the measure** – small effort **Effectiveness of the measure** – no simple manipulation possible – no increased power but higher noise level expected **Restrictions caused by the measure** – none **Identification of the measure** – Original part is marked (see control plate) on vehicles of classes A and B. – When marking (acc. to control plate) is fraudulent the manipulation cannot be identified. **Remarks** – Extension to vehicles of classes L2e und L6e useful. – This manipulation is hardly used any more in the vehicle classes L3e[C,D], L4e, L5e and L7e.

Nature of manipulation in the area: **exhaust system**	Technical systems/ measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Alteration of the length of the exhaust system by removal of parts	The alteration of the length of the exhaust system does not have a significant influence on power output or top speed. The length of the exhaust system cannot be altered by removal of parts. Prescribed marking of parts / control plate	No. 3.6 / 3.10.	A, B	L1e, L3e[B]	**Cost of the measure** – little cost **Effort / realisation of the measure** – small effort **Effectiveness of the measure** – Simple manipulation not possible. – No increased power output but higher noise expected. **Restrictions caused by the measure** – none **Identification of the measure** – Original part is marked at vehicles of classes A and B (see control plate). – When marking is false (according to control plate) the manipulation cannot be identified. **Remarks** – Extension to vehicles of classes L2e und L6e useful. – This manipulation is hardly used any more in the vehicle classes L3e[C,D], L4e, L5e and L7e.

Nature of manipulation in the area: **exhaust system**	Technical systems/ measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Continued Alteration of the length of the exhaust system by removal of parts	**Additional measures** On systems consisting of a number of parts, all main parts will be marked differently and mentioned on the control plate.	---	---	L1e, L2e, $L3e^{B}$ and L6e	More precise explanation of the above mentioned point.

Nature of the manipulation in the area: **Engine Control**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Exchange the camshaft between approved vehicles	Camshafts cannot be exchanged between approved vehicles of one manufacturer. The camshaft is designed for highest engine power output. A replacement camshaft will therefore have no significant influence on the engine performance and top speed.	No. 2.1	A, B	L1e, L3e[B]	**Cost of the measure** – little cost **Effort / realisation of the measure** – small effort **Effectiveness of the measure** – manipulation is prevented **Restrictions caused by the measure** – none **Identification of the measure** – Manipulation cannot be detected from the outside. **Remarks** – On modern vehicles this method of manipulation looses importance (poor cost-value-relation). – Including vehicles of the classes L2e and L6e makes sense, as identical propulsion systems are used.

Nature of the manipulation in the area: **Engine Control**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Replacement of camshaft with after market parts	none The camshaft is designed for highest engine power output. A replacement of the camshaft will therefore not result in significant increase of power output and top speed.	---	---	all	**Effort / realisation of the measure** – No direct measures by the vehicle manufacturer are possible. **Effectiveness of the measure** – manipulation requires high effort. **Identification of the measure** – Manipulation cannot be identified from outside. **Remarks** – Replacement parts are offered in the after market, manipulation can therefore not be prevented. – Today, this kind of manipulation is hardly applied (poor cost-value-relation).

Nature of the manipulation in the area: **Engine Control**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Alteration of the camshaft	none	---	---	all	**Effort / realisation of the measure** – No measures are possible for the vehicle manufacturer. **Effectiveness of the measure** – Manipulation requires high effort. **Identification of the measure** – Manipulation cannot be identified from outside. **Remarks** – Today, this kind of manipulation is hardly applied (poor cost-value-relation).
Alteration of the setting of the ignition system (ignition timing characteristic, ignition timing)	Alteration of the setting of the ignition system has no significant influence on power output and / or top speed. Ignition setting cannot be altered.	No. 2.2	A, B	L1e, L3e[B]	**Cost of the measure** – little cost **Effort / realisation of the measure** – small effort **Effectiveness of the measure** – Manipulation is prevented as modern ignition systems can generally not be adjusted mechanically. **Remarks** – This manipulation is hardly used any more as modern vehicles are equipped with electronically controlled ignition timing or an ECU.

Nature of the manipulation in the area: **Engine Control**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Removal or alteration of electric / electronic speed limiter	The removal or alteration of the electric / electronic speed limiter does not increase the top speed by more than 10 %. Electric or electronic speed limiters are not installed.	No. 3.8	A, B	L1e, L3e[B]	**Cost of the measure** – No additional cost **Effort / realisation of the measure** – No additional effort **Effectiveness of the measure** – Manipulation is prevented. **Remarks** – Class B vehicles are limited to a top speed of 80 km/h for the German market. – The speed limiter normally is not a separate component but integrated into the electronic ignition or the engine ECU. – Including vehicles of the classes L2e and L6e makes sense, as identical propulsion systems are used. – Extension to vehicles of all classes is useful (see next paragraph).

Nature of the manipulation in the area: **Engine Control**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Removal or alteration of electric / electronic speed limiter	Electric/electronic speed limiters are not installed. **Additional measures** Manipulation is detected by the ECU and the engine will be stopped automatically.	---	---	alle	**Effort / realisation of the measure** – No direct influence by the vehicle manufacturer is possible. **Effectiveness of the measure** – Manipulation is possible, if a speed limiter is installed. **Identification of the manipulation** – not or by well trained personnell only. **Remarks** – Today the vehicle speed is limited by the ECU in combination with a vehicle speed sensor. – To state of the technology this manipulation can be applied. – Measures which prevent simple manipulation are required for all vehicle classes.

Nature of the manipulation in the area: **Engine Control**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Removal or alteration of the electric/electronic device controlling the ignition advance	The removal or alteration of the electric/electronic device for the ignition advance has no significant influence on power output and/or top speed. The timing of the electronic ignition system can not be altered.	No. 3.8	A, B	L1e, L3e[B]	**Cost of the measure** – little cost **Effort / realisation of the measure** – small effort **Effectiveness of the measure** – Manipulation is possible, if an electronic ignition system is used. **Identification of the measure** – Manipulation can only be identified by well trained personnel. **Remarks** – Ignition timing is controlled on state of the art vehicles by an ECU. – This manipulation is possible on modern vehicles. – Measures which prevent simple manipulation are required for all vehicle classes. – This method of manipulation is also relevant for modern vehicles of other classes.

Nature of the manipulation in the area: **Engine Control**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Removal or alteration of the electric / electronic device to limit engine speed	Electronic / electric devices to limit the engine speed are not installed **or** are simply there to save the engine from damage **or** removing / alteration of the electronic engine speed limiter has no significant influence on engine power output and/or top speed.	---	---	all	**Cost of the measure** – little cost **Effort / realisation of the measure** – alteration of the engine concept could be required, if limitations exist for certain countries. **Effectiveness of the measure** – manipulation on engines with engine speed limiter can lead to the destruction of the engine. **Identification of the measure** – Manipulation can only be detected by highly qualified personnel. **Remarks** – The engine speed limit is controlled by the ECU in combination with a engine speed sensor. – The noise test can on some vehicles only be passed with a reduction of the engine speed in relation to the vehicle speed and the gear it is driven in. – According to the state of technology, this manipulation is can be used. – Measures preventing an easy manipulation are required for all classes.

Nature of the manipulation in the area: **Engine Control**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Exchange or alteration of the ECU	The ECU is contained in plastic and cannot be tampered with. Marking of all electronic components of the vehicle/control plate **Additional measures** Replacement or alteration of the ECU is only possible with special 'tools' such as a special code to enter the ECU electronically.	---	---	all	**Cost of the measure** – little cost **Effort / realisation of the measure** – small effort **Effectiveness of the measure** – Easy manipulation is not possible. – Input signals to the ECU can be manipulated. **Identification of the measure** – Manipulation can be identified. The original part is marked (see control plate). – If the marking is fraudulent (according to the control plate) the manipulation cannot be identified. **Remarks** – According to the state of technology, this manipulation can be used. – These parts are developed and available on the after market. – The marking of the electronic components and the identification of the control plate should be extended to all vehicle classes.

Nature of the manipulation in the area: **Engine Control**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Alteration of the engine control with additional control units	Marking of all approved electronic components / control plate	---	---	all	**Cost of the measure** – little cost **Effort / realisation of the measure** – small effort **Effectiveness of the measure** – Easy manipulation is not possible. **Restrictions caused by the measure** – none **Identification of the measure** – Manipulation can be identified. Original parts are marked (see control plate). – When marking is fraudulent according to control plate, manipulation cannot be identified. **Remarks** – According to the state of technology, this manipulation can be used. – These parts are developed and available on the after market. – Marking of the components and the identification on the control plate should therefore be extended to all vehicle classes.

Nature of the manipulation in the area: **Engine Control**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Alteration of the electronic / electric engine speed limiter by alteration of the throttle stop (electronic accelerator)	Analogue to „exchange or alteration of the ECU“	---	---	all	Assessment: see above **Remarks** – The technology is not used to-date, but with more stringent emission legislation in the future it could then be applied.

Manipulation der Kraftübertragung

Nature of the manipulation in the area: **Variomatic**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Alteration of the transmission ratio for example by installing washers or alteration of the friction cones	Prescribed marking of parts / control plate	No 3.10	A, B	L1e, L3e[B]	**Cost of the measure** – little cost **Effort / realisation of the measure** – small effort **Effectiveness of the measure** – Manipulation is still possible! **Restrictions caused by the measure** – none **Identification of the measure** – Manipulation cannot be easily identified from outside, but can be found through the marking and the control plate. The manipulations where washers are built into the transmission are harder to identify. **Remarks** – Information about the used washer-like plates between the cones could be given on the control plate. – Extension to vehicle classes L2e and L6e seems useful, as identical engines are used there

Nature of the manipulation in the area: **Variomatic**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Continued Alteration of the transmission ratio for example by installing washers or alteration to the friction cones	**Additional measures** Housing is bolted shut with special screws or with tear off screws and can only be opened with special tools.	---	---	L1e, L2e, L3e^{B}, L6e	**Cost of the measure** – little cost **Effort / realisation of the measure** – small effort **Effectiveness of the measure** – Manipulation only possible with special tools! **Restrictions caused by the measure** – Service and repair are hindered. – Cost and time effort for servicing will increase. **Identification of the measure** – Manipulation cannot be identified from outside. **Remarks** – The measure is useful for these vehicle classes and is used by some manufacturers. – On some vehicles the variomatic transmission can only be opened by special tools.

Nature of the manipulation in the area: **Variomatic**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Alteration of the gear changing speeds by manipulation of the mechanical controller	None	---	---	all	**Effectiveness of the measure** – Manipulation still possible! – Manipulation has no significant influence to the power output or top speed. **Restrictions caused by the measure** – none **Identification of the measure** – Manipulation cannot be identified from outside. **Remarks** – Fitting parts are available on the after market. – Simple manipulations can be complicated with the suggested measures (see above).

Nature of the manipulation in the area: **chain and sprocket**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Alteration of the transmission ratio by changing sprocket and/or pinion	Prescribed marking of parts / control plate	No. 3.10	A, B	L1e, L3e[B]	**Cost of the measure** – little cost **Effort / realisation of the measure** – small effort **Effectiveness of the measure** – manipulation is possible **Restrictions caused by the measure** – none **Identification of the measure** – Manipulation can be identified from outside by comparison of the markings with the control plate. **Remarks** – According to the state of technology, this manipulation can be used in all classes. – Extension to all vehicle classes seems useful.

Nature of the manipulation in the area: **chain and sprocket**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Continued Alteration of the transmission ratio by changing sprocket and/or pinion	Pinion and sprocket should be secured with tear-off screws or special screws.	---	---	alle	**Cost of the measure** – little cost **Effort / realisation of the measure** – small effort **Effectiveness of the measure** – Manipulation is possible when special tools are used. **Restrictions caused by the measure** – Service and repair are hindered. **Identification of the measure** – Manipulation can be identified from outside.

Nature of manipulation in the area: **Gear box**	Technical systems / measures against manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Activation of blocked gears (for example 6th gear)	none	---	---	L1e, L3e[B]	**Manipulation is not used any more** – According to the state of technology, no gears are blocked to reduce top speed or power development.

Manipulation of the marking

Nature of the manipulation in the area **Marking**	Technical systems / measures against the manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Replacement of the according to 97/24/EC chapter 7 marked parts	Marking is designed to discourage fraud.	No. 3.10	A, B	L1e, L3e[B]	**Cost of the measure** – No significant cost **Effort / realisation of the measure** – Little effort **Effectiveness of the measure** – Manipulation not possible by simple means. **Restrictions caused by the manipulation** – none **Identification of the manipulation** – Manipulation can be recognised by comparison of marking and control plate. – When the marking is fraudulent (according to the control plate) the manipulation cannot be identified. High quality frauds can only be identified by comparing the data with the approval data. **Remarks** – Extension to all vehicle classes useful.

Nature of the manipulation in the area **Marking**	Technical systems / measures against the manipulation	Measures according to 97/24/EC chap. 7	Measures necessary for vehicle class acc. to 97/24/EC chap.7	Vehicle class acc. to 2002/24/EC	Remarks / analysis
Replacement of the control plate as required according to directive 97/24/EC, chapter 7	The control plate is designed to make fraud complicated. The control plate cannot be removed without its destruction.	No. 3.10	A, B	L1e, L3e[B]	**Cost of the measure** – No significant cost **Effort / realisation of the measure** – No significant effort **Effectiveness of the measure** – Manipulation not possible by simple means. **Restrictions caused by the measure** – none **Identification of the manipulation** – Manipulation can be identified by comparison of control plate and marking. – When the control plate is fraudulent, a manipulation can not be detected. High quality frauds can only be identified by comparing the data of the part with the approval documents. **Remark** – Extension to all vehicle classes useful.

Vehicle class according to directive 97/24/EC, chapter 7	Percentage of turnover of exchange and tuning parts which are **not** for use on public streets [%]	Propulsion unit [%]	pistion / cylinder [%]	carburation [%]	intake system [%]	exhaust system [%]	engine control [%]	Transmission total [%]	Variomatic [%]	gear box [%]	pulley/sprocket/chain [%]	remarks	Analysis of the questionnair to dealer ...
A Two wheeled motor vehicles with a design speed of up to 45 km/h. Swept volume of engine up to 50 cm3 in the case of combustion engines or a maximum continuous power output of 4 kW for electrically powered vehicles.	**50**	**21**	8	2	2	8	1	**19**	7	0	12		1
	0	**0**	0	0	0	0	0	**0**	0	0	0		2
	0	**0**	0	0	0	0	0	**0**	0	0	0		3
	0	**0**	0	0	0	0	0	**0**	0	0	0		4
	0	**0**	0	0	0	0	0	**0**	0	0	0		5
	0	**0**	0	0	0	0	0	**0**	0	0	0	1	6
	0	**0**	0	0	0	0	0	**0**	0	0	0	3	7
	0	**0**	0	0	0	0	0	**0**	0	0	0	3	8
	50	**30**	< 10	0	< 10	> 50	< 10	**30**	< 10	< 3	< 10	4	-
B Two wheeled motor vehicles **with or without** side-car, powered by an internal combustion engine with a swept volume of more than 50 cm³ and up to 125 cm³ **and / or** a maximum design speed of more than 45 km/h. The power output of the engine must not exceed 11 kW.	**50**	**21**	8	2	2	8	1	**19**	7	0	12		1
	0	**0**	0	0	0	0	0	**0**	0	0	0		2
	0	**0**	0	0	0	0	0	**0**	0	0	0		3
	0	**0**	0	0	0	0	0	**0**	0	0	0		4
	0	**0**	0	0	0	0	0	**0**	0	0	0		5
	0	**0**	0	0	0	0	0	**0**	0	0	0	1	6
	0	**0**	0	0	0	0	0	**0**	0	0	0	3	7
	0	**0**	0	0	0	0	0	**0**	0	0	0	3	8
	50	**30**	< 10	0	< 10	> 50	< 10	**30**	< 10	< 3	< 10	4	-

Vehicle class according to directive 97/24/EC, chapter 7	Percentage of turnover of exchange and tuning parts which are **not** for use on public streets [%]	Propulsion unit [%]	pistion / cylinder [%]	carburation [%]	intake system [%]	exhaust system [%]	engine control [%]	Transmission total [%]	Variomatic [%]	gear box [%]	pulley/sprocket/chain [%]	remarks	Analysis of the questionnair to dealer ...
C Two wheeled motor vehicles **with or without** side-car, powered by an internal combustion engine with a swept volume of more than 50 cm³ **and / or** a design speed of more than 45 km/h. The engine power output must not exceed 25 kW, and the power to weight ratio must not exceed 0,16 kW/kg.	**50**	**20**	0	0	10	10	0	**10**	0	0	10		1
	0	**0**	0	0	0	0	0	**0**	0	0	0		2
	10	**10**	0	0	0	10	0	**0**	0	0	0		3
	0	**0**	0	35	30	35	0	**0**	0	0	0		4
	0	**0**	0	0	0	0	0	**0**	0	0	0		5
	0	**0**	0	0	0	0	0	**0**	0	0	0	1	6
	0	**0**	0	0	0	0	0	**0**	0	0	0	3	7
	0	**0**	0	0	0	0	0	**0**	0	0	0	3	8
	30	**90**	< 1	< 1	< 10	> 80	< 5	**< 1**	< 1	< 1	< 1	4	-
D Two wheeled motor vehicles **with or without** side-car powered by an internal combustion engine with a swept volume exceeding 50 cm³ **and / or** a design speed exceeding 45 km/h - motorcycles other than those in categories B or C	**50**	**7**	0	0	5	2	0	**8**	0	8	0		1
	84	**84**	0	0	0	84	0	**0**	0	0	0		2
	10	**10**	0	0	0	10	0	**0**	0	0	0		3
	10	**90**	0	10	20	45	15	**10**	0	0	10		4
	0	**0**	0	0	0	0	0	**0**	0	0	0		5
	0	**0**	0	0	0	0	0	**0**	0	0	0	1	6
	0	**0**	0	0	0	0	0	**0**	0	0	0	3	7
	0	**0**	0	0	0	0	0	**0**	0	0	0	3	8
	30	**90**	< 1	< 1	< 10	> 80	< 5	**< 1**	< 1	< 1	< 1	4	-

Vehicle class	Percentage of turnover of exchange and tuning parts which are **not** for use on public streets [%]	Propulsion unit [%]	pistion / cylinder [%]	carburation [%]	intake system [%]	exhaust system [%]	engine control [%]	Transmission total [%]	Variomatic [%]	gear box [%]	pulley/sprocket/chain [%]	remarks	Analysis of the questionnaire to dealer ...
A-D Three- and four wheeled vehicles of categorie A-D	**0**	**0**	0	0	0	0	0	**2**	0	0	2		1
	0	**0**	0	0	0	0	0	**0**	0	0	0		2
	0	**0**	0	0	0	0	0	**0**	0	0	0		3
	0	**0**	0	0	0	0	0	**0**	0	0	0		4
	0	**0**	0	0	0	0	0	**0**	0	0	0		5
	0	**0**	0	0	0	0	0	**0**	0	0	0	1	6
	0	**0**	0	0	0	0	0	**0**	0	0	0	3	7
	0	**0**	0	0	0	0	0	**0**	0	0	0	3	8
	< 1	**< 1**	< 1	< 1	< 1	< 1	< 1	**< 1**	< 1	< 1	< 1	4	-

Remarks:
- 1) answer: no adequate assortment
- 2) answer: no evaluable informations
- 3) questionnaire not completed
- 4) Approximation as a result of an investigation on the internet

Year	number of TI's	FC 623	FC 624	FC 801	FC 802	FC 803	FC 804	FC 805	FC 806	FC 807	FC 808	FC 809	FC 810	Sum
2000	78117	378	1475	633	954	474	0	21	16	118	275	3	6	4353
2001	170269	837	3201	1174	1354	961	8	38	46	231	552	12	12	8426
2002	167406	815	3114	1091	1379	940	18	58	52	231	597	8	12	8315

Percentage of faults														
2000	100	0,484	1,888	0,810	1,221	0,607	0,000	0,027	0,020	0,151	0,352	0,004	0,008	5,572
2001	100	0,492	1,880	0,689	0,795	0,564	0,005	0,022	0,027	0,136	0,324	0,007	0,007	4,949
2002	100	0,487	1,860	0,652	0,824	0,562	0,011	0,035	0,031	0,138	0,357	0,005	0,007	4,967

Fault Code (FC):

623 engine / drive train: clutch / gear box
624 engine / drive train: driveshaft / -chain, sleeve
801 exhaust system: faults / fixing
802 exhaust system: wrong model
803 noise emissions
804 smoke emissions
805 emissions
806 noise suppression
807 fuel- / gas- / pipe / tank
808 engine / drive train – oil leakage
809 engine coolant leakage
810 steering / brake / suspension

Recommendation for the alteration of directive 97/24/EC chapter 7 - Measures against unauthorised manipulation on two- and three wheeled mopeds and motorbikes -

Explanations to the following table:

see 2.3.1 "requirements for the alteration of the directive 97/24/EC, chapter 7"

Explanations to the vehicle classes:

L1e[A]	:	corresponds with vehicle class L1e according to directive 2002/24/EC or vehicle class A according to directive 97/24/EC chapter 7, respectively
L2e	:	vehicle class according to directive 2002/24/EC
L3eB	:	corresponds with vehicle class L3e according to directive 2002/24/EC or vehicle class B according to directive 97/24/EC chapter 7
L3e[C]	:	corresponds with vehicle class L3e according to directive 2002/24/EC or vehicle class C according to directive 97/24/EG Kap. 7
L3e[D]	:	corresponds with vehicle class L3e according to directive 2002/24/EC or vehicle class D according to directive 97/24/EG Kap. 7
L4e	:	vehicle class according to directive 2002/24/EG
L5e	:	vehicle class according to directive 2002/24/EG
L6e	:	vehicle class according to directive 2002/24/EG
L7e	:	vehicle class according to directive 2002/24/EG

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
1	**Definitions** or the purposes of this Chapter:	---										– valid for all vehicle classes
1.1	**'Anti-tampering measures for two-wheel mopeds and motorcycles`** means a series of technical requirements and specifications the aim of which is to prevent, as far as possible, unauthorized modifications which may prejudice safety, in particular by increasing vehicle performance, and damage the environment.	---										– valid for all vehicle classes
1.2	**'Vehicle performance`** means the maximum speed of mopeds and the engine power of motorcycles.	---										– valid for all vehicle classes
1.3	**'Vehicle categories`** means vehicles subdivided into the following categories:	---										– valid for all vehicle classes
1.3.1	Category A vehicles - mopeds.	Category $L1e^{A}$ vehicles - mopeds.	x									– alteration of the term

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
1.3.2	Category B vehicles - motorcycles with a cylinder capacity not exceeding 125 cc and a power not exceeding 11 kW.	Category $L3e^{B}$ vehicles - motorcycles with a cylinder capacity not exceeding 125 cc and a power not exceeding 11 kW.			x							– alteration of the term
1.3.3	Category C vehicles - motorcycles with a power not exceeding 25 kW and a power/mass ratio not exceeding 0,16 kW/kg, mass in running order as defined in section 2 of Note (d) in Annex II to Directive 92/61/EEC.	Category $L3e^{C}$ vehicles - motorcycles with a power not exceeding 25 kW and a power/mass ratio not exceeding 0,16 kW/kg, mass in running order as defined in section 2 of Note (d) in Annex II to Directive 92/61/EEC.				x						– alteration of the term
1.3.4	Category D vehicles - motorcycles other than those in categories B or C.	Category $L3e^{D}$ vehicles - motorcycles other than those in categories $L3e^{B}$ or $L3e^{C}$.					x					– alteration of the term
1.3.5 ff	---	Category L2e ... L4e ... L5e ... L6e ... L7e ...		n				n	n	n	n	– Extension of the terms to further vehicle classes acc. to dir. 2002/24/EC

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
1.4	**'Unauthorized modification`** means a modification which is not permitted by this Chapter.	---										– valid for all vehicle classes
1.5	**'Interchangeability of parts`** means the interchangeability of parts which are not identical.	---										– valid for all vehicle classes
1.6	**'Inlet conduit`** means the combination of the inlet passage and the intake pipe.	---										– valid for all vehicle classes
1.7	**'Inlet passage`** means the passage for the intake of air within the cylinder, cylinder-head or crankcase.	---										– valid for all vehicle classes
1.8	**'Intake pipe`** means a part connecting the carburettor or air-control system and the cylinder, cylinder-head or crankcase.	---										– valid for all vehicle classes

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
1.9	**'Intake system`** means the combination of the inlet conduit and the intake silencer.	---										– valid for all vehicle classes
1.10	**'Exhaust system`** means the combination of the exhaust pipe, the expansion box and the exhaust silencer necessary for the absorption of noise emitted by the engine.	---										– valid for all vehicle classes
1.11	**'Exhaust system`** means the combination of the exhaust pipe, the expansion box and the exhaust silencer necessary for the absorption of noise emitted by the engine.	---										– valid for all vehicle classes
2	**General Provision**											
2.1	Interchangeability of non-identical parts between component-type-approved vehicles:											
2.1.1	For any vehicle in categories A or B, the interchangeability of the following components or of a set of the following components:	…	x	n	x					n		– …

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
	a) for two-stroke vehicles: cylinder/piston combination, carburettor, intake pipe, exhaust system, b) for four-stroke vehicles: cylinder head, camshaft, cylinder/piston combination, carburettor, intake pipe, exhaust system, between that vehicle and any other vehicle from the same manufacturer is not permitted if such interchangeability results in the vehicle's maximum design speed increasing by more than 5 km/h in the case of category A vehicles or the vehicle's power increasing by more than 10 % in the case of category B vehicles. In no case may the maximum design speed or the maximum net engine power of the relevant category be exceeded. In particular, for the low-performance mopeds referred to in the Note in Annex I to Directive 92/61/EEC, the maximum design speed is 25 km/h.	For any vehicle in categories L1e[A], L2e, L3e[B] or L6e, the interchangeability of the following components or of a set of the following components: ... ... In particular, for the low-performance mopeds referred to in the Note in Annex I to Directive 2002/24/EEC, the maximum design speed is 25 km/h.										– Extension of the field of application to vehicles of the classes L2e and L6e recommended, as the engine and transmission used are identical to those of vehicle class L1e[A]

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
2.1.1.1	For any vehicle in Category B, of which variants exist pursuant to Article 2 of Directive 92/61/EEC which differ in respect of maximum speed or maximum net power as a result of additional restrictions imposed by Member States under Article 3 (5) of Council Directive 91/439/EEC of 29 July 1991 on driving licences (1), the requirements of 2.1.1(a) and (b) do not apply to the interchangeability of components unless this results in the vehicle's power exceeding 11 kW. 1) OJ No L 237, 24. 8. 1991, p. 1.	---			x							– By reduction of the top speed (for example to 80 km/h) with an alteration-kit. Protection against manipulation not sufficient. A discussion for the alteration of national driver's license legislation or standardisation of the European driver's license legislation is required.

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
2.1.2	In cases involving the interchangeability of components, the manufacturer must ensure that the competent authorities are provided with the necessary information and, where appropriate, the necessary vehicles to enable them to verify that the requirements of this section have been met.	---	x	n	x					n		– see 2.1.1
2.2	The manufacturer must declare that modifications of the following characteristics will not increase the maximum power of a motorcycle by more than 10 % in the case of category B vehicles or increase the maximum speed of a moped by more than 5 km/h and that in no case may the maximum design speed or the maximum net engine power for the category concerned be exceeded: ignition (advance, etc.), fuel feed system.	The manufacturer must declare that modifications of the following characteristics will not increase the maximum power of a motorcycle by more than 10 % in the case of category L3e^{B} vehicles or increase the maximum speed of a moped by more than 5 km/h% in the case of category L1e^{A}, L2e or L6e vehicles and that in no case may the maximum design speed or the maximum net engine power for the category concerned be exceeded: ignition (advance, etc.), fuel feed system.	x	n	x					n		– Extension of the field of application to vehicles of the classes L2e and L6e recommended, as the engine and transmission are identical to those of the vehicle class L1e^{A} .

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
2.3	Category B motorcycles must comply with the requirements of either 2.3.1 or 2.3.2 or 2.3.3 and with 2.3.4 and 2.3.5.	Category $L3e^{B}$ motorcycles must comply with the requirements of either 2.3.1 or 2.3.2 or 2.3.3 and with 2.3.4 and 2.3.5.			x							

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
2.3.1	An unremovable sleeve must be located in the inlet conduit. If such a sleeve is located in the intake pipe, the latter must be fixed to the engine block by means of shear-bolts or bolts removable only using special tools. The sleeve must have minimum hardness of 60 HRC. In the restricted section it must not exceed 4 mm in thickness. Any interference with the sleeve aimed at removing or modifying it must lead to either the destruction of the sleeve and its support or complete and permanent malfunctioning of the engine until it is restored to its approved condition. A marking with indication of the vehicle category or categories as defined in 1.3 must be legible on the surface of the sleeve or not far from it.				x							

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
2.3.2	Each intake pipe must be fixed with shear-bolts or bolts removable only using special tools. A restricted section, indicated on the outside, must be located inside the pipes; at that point the wall must be less than 4 mm in thickness, or 5 mm if using a flexible material, such as rubber for example. Any interference with the pipes aimed at modifying the restricted section must lead to either the destruction of the pipes or complete and permanent malfunctioning of the engine until they are restored to their approved condition. A marking with indication of the vehicle category or categories as defined in 1.3 must be legible on the pipes.				x							

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
2.3.3	The part of the inlet conduit located in the cylinder head must have a restricted section. In the whole inlet passage there must not be a more restricted section (except the valve-seat section). Any interference with the conduit aimed at modifying the restricted section must lead to either the destruction of the pipe or complete and permanent malfunctioning of the engine until it is restored to its approved condition. A marking with indication of the vehicle category as defined in 1.3 must be legible on the cylinder head.				x							
2.3.4	The diameter of the restricted section referred to in sections 2.3.1, 2.3.2 and 2.3.3 varies according to the motorcycle concerned.				x							

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
2.3.5	The manufacturer must supply the diameter of the restricted section and prove to the competent authorities that this restricted section is the most critical for the passage of gases, and that there is no other section which, if modified, could increase vehicle performance by more than 10 %. Four years after this Directive is implemented, the maximum diameters of the restricted section for the various types of motorcycles must be determined numerically following the procedure set out in Article 6 on the basis of the diameters of the restricted sections supplied by the manufacturer.				x							
2.4	Removing the air filter must not have the effect of increasing a moped's maximum design speed by more than 10 %.	Removing the air filter must not have the effect of increasing a motorcycles maximum design speed by more than 10 % in the case of category L1e, L2e or L6e vehicles.	x	n						n		– Extension of the field of application to vehicles of the classes L2e and L6e recommended, as the engine and transmission are identical to those of the vehicle class $L1e^{A}$.

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
3	**Specific requirements for vehicles in categories A and B** The requirements in this section are not mandatory unless a single requirement or combination of requirements proves necessary to impede tampering resulting in the vehicle's maximum design speed increasing by more than 5 km/h in the case of category A vehicles or the vehicle's power increasing by more than 10 % in the case of category B vehicles. In no case may the maximum design speed or maximum net engine power of the relevant category be exceeded.	**Specific requirements for vehicles in categories L1e[A], L2e,L3e[B] and L6e** The requirements in this section are not mandatory unless a single requirement or combination of requirements proves necessary to impede tampering resulting in the vehicle's maximum design speed increasing by more than 5 km/h in the case of category L1e[A], L2e and L6e vehicles or the vehicle's power increasing by more than 10 % in the case of category L3e[B] vehicles. In no case may the maximum design speed or maximum net engine power of the relevant category be exceeded.	x	n	x					n		– Extension of the field of application to vehicles of the classes L2e and L6e recommended, as the engine and transmission are identical to those of the vehicle class L1e[A] .

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
3.1	Cylinder-head gasket: after mounting, the maximum thickness of a cylinder-head gasket, if any, may not exceed - 1,3 mm for mopeds, and - 1,6 mm for motorcycles.	Cylinder-head gasket: after mounting, the maximum thickness of a cylinder-head gasket, if any, may not exceed – category L1e[A], L2e and L6e : 1,3 mm – category L3e[B] : 1,6 mm.	x	n	x					n		– see 3
3.2	Cylinder/crankcase gasket for two-stroke engines: the maximum thickness of any gasket between the base of the cylinder and the crankcase, if any, may not exceed 0,5 mm, after mounting.		x	n	x					n		– see 3

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
3.3	Piston for two-stroke engines: the piston, when in position at top dead centre, must not cover the inlet port. This requirement does not apply to those parts of the transfer port which coincide with the inlet port in the case of vehicles the engine of which is equipped with an induction system incorporating reed valve(s).		x	n	x					n		– see 3
3.4	For two-stroke engines, rotation of the piston through 180° must not increase engine performance.		x	n	x					n		– see 3
3.5	Without prejudice to the provisions of 2.3, no artificial restriction is permitted in the exhaust system. The valve guides of a four-stroke engine are not considered to be artificial restrictions.		x	n	x					n		– see 3

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
3.6	The part(s) of the exhaust system inside the silencer(s) which determine(s) the effective length of the exhaust pipe must be affixed to the silencer(s) or expansion box(es) in such a way that it (they) cannot be removed.		x	n	x					n		– see 3
3.7	Any component (mechanical, electrical, structural, etc.) which limits full engine load (e.g. a throttle control stop or a twist-grip stop) is forbidden.		x	n	x	n	n	n	n	n	n	– Extension of the field of application to vehicles of all classes recommended – As the allowed max. power output for vehicles of the class L3e is limited in France (72 kW) and Switzerland (78 kW), throttle stops are used to limit the power output.
3.8	If a category A vehicle is equipped with electrical/electronic devices which limit its speed, the vehicle manufacturer must provide data and evidence to the test authorities to demonstrate that modification or disconnection of the device or its wiring system will not increase the moped's maximum speed by more than 10 %. Electrical/electronic devices which cut and/or inhibit spark ignition are forbidden if their	If a category L1e[A], L2e or L6e vehicle is equipped with electrical/electronic devices which limit its speed, the vehicle manufacturer must provide data and evidence to the test authorities to demonstrate that modification or disconnection of the device or its wiring system will not increase the moped's maximum speed by more than 10	x	n	x					n		– see 3

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
	operation results in an increase in fuel consumption or unburnt hydrocarbon emissions. Electrical/electronic devices which vary spark advance must be designed in such a way that the engine power, measured with the device functioning, does not differ by more than 10 % from the power measured with the device disconnected and with spark advance set for maximum road speed. The maximum road speed must be achieved with the spark advance set within ± 5 ° of the value specified for the development of maximum power.	%. Electrical/electronic devices which cut and/or inhibit spark ignition are forbidden if their operation results in an increase in fuel consumption or unburnt hydrocarbon emissions. Electrical/electronic devices which vary spark advance must be designed in such a way that the engine power, measured with the device functioning, does not differ by more than 10 % from the power measured with the device disconnected and with spark advance set for maximum road speed. The maximum road speed must be achieved with the spark advance set within ± 5 ° of the value specified for the development of maximum power.										
3.9	Should an engine be equipped with a reed valve, this must be fixed with shear-bolts which prevent re-use of its support or bolts removable only using special tools.		x	n	x					n		– see 3

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
3.10	Requirements for the identification of a vehicle engine type											---
3.10.1	Marking of original parts/components:		x	n	x	n	n	n	n	n	n	– Extension of the field of application to vehicles of the classes L2e and L6e as well as L3e[C,D], L4e, L5e and L7e recommended, as these vehicles can also be manipulated by replacement of components.

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
3.10.1.1	The parts components listed below must be durably and indelibly marked with the code number(s) and symbols assigned for identification purposes either by the vehicle manufacturers of such parts or components. Such marking may take the form of a label provided that it remains legible in normal use and cannot be detached without being destroyed. In general, this marking must be visible without the necessity of dismantling the part in question or other parts of the vehicle. However, where the bodywork or other parts of the vehicle obscure a marking, the vehicle manufacturer must provide the competent authorities with indications for opening or dismantling the parts in question and the location of the markings.		x	n	x					n		– Extension of the field of application to vehicles of the classes L2e and L6e recommended, as identical engines and transmissions are used as in vehicle class $L1e^{A}$ – Marking of components or parts is in some cases required for other vehicles classes as well (see below)

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
3.10.1.2	The letters, figures or symbols used must be at least 2,5 mm in height and be easily legible. However, for the marking of parts such as those specified in 3.10.1.3.7 and 3.10.1.3.8, the minimum height must be as specified in Chapter 9.		x	n	x					n		– see 3.10.1.1
3.10.1.3	The parts and components referred to in 3.10.1.1 are the following:		x	n	x					n		– see 3.10.1.1
3.10.1.3.1	intake silencer (air filter)		x	n	x	n	n	n	n	n	n	– see 3.10.1
3.10.1.3.2	carburettor or equivalent device		x	n	x	n	n	n	n	n	n	– see 3.10.1
3.10.1.3.3	inlet pipe (if cast separately from the carburettor or cylinder or crankcase)		x	n	x					n		– see 3.10.1.1
3.10.1.3.4	cylinder		x	n	x					n		– see 3.10.1.1
3.10.1.3.5	cylinder head		x	n	x					n		– see 3.10.1.1
3.10.1.3.6	crankcase		x	n	x					n		– see 3.10.1.1
3.10.1.3.7	exhaust pipe(s) (if separate from the silencer)		x	n	x	n	n	n	n	n	n	– see 3.10.1

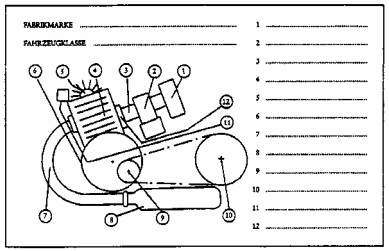
Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
3.10.1.3.8	silencer(s)		x	n	x	n	n	n	n	n	n	– see 3.10.1
3.10.1.3.9	transmission driving part (front chain wheel (sprocket) or pulley)		x	n	x	n	n	n	n	n	n	– see 3.10.1
3.10.1.3.10	transmission driven part (rear chain wheel (sprocket) or pulley)		x	n	x	n	n	n	n	n	n	– see 3.10.1
3.10.1.3.11	any electrical/electronic devices for engine management (ignition, injection, etc.) and all the different electronic cards in the case of a device which is designed to be opened		x	n	x	n	n	n	n	n	n	– see 3.10.1
3.10.1.3.12	restricted section (sleeve or other).		x	n	x					n		– see 3.10.1.1
3.10.2	Anti-tampering control plate		x	n	x	n	n	n	n	n	n	– see 3.10.1

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
3.10.2.1	A plate of at least 60 mm × 40 mm must be fixed to each vehicle in a durable manner (it may be adhesive but not detachable without prejudice to its integrity) in an easily accessible place on the vehicle. On this plate the manufacturer must indicate:		x	n	x	n	n	n	n	n	n	– see 3.10.1
3.10.2.1.1	his name or trade mark;		x	n	x	n	n	n	n	n	n	– see 3.10.1
3.10.2.1.2	the letter representing the vehicle category;	motorcycles category	x	n	x	n	n	n	n	n	n	– see 3.10.1
3.10.2.1.3	for the transmission driving and driven parts, the number of cogs (in the case of a sprocket), or the diameter (in mm) in the case of a pulley;		x	n	x	n	n	n	n	n	n	– see 3.10.1

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
3.10.2.1.4	the code number(s) or symbol(s) identifying the parts or components marked in accordance with 3.10.1.		x	n	x	n	n	n	n	n	n	– see 3.10.1 – Depending on vehicle classes, different components have to be marked.
3.10.2.2	Letters, figures or symbols must be at least 2,5 mm in height and be easily legible. A simple drawing showing the correspondence between parts or components and their code numbers or symbols is given in Figure 1.		x	n	x	n	n	n	n	n	n	– see 3.10.1
3.10.3	Marking of non-original parts/components											

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
3.10.3.1	In the case of components type-approved for the vehicle in accordance with this Chapter which are alternatives to those listed in 3.10.1.3 and are sold by the vehicle manufacturer, the code number(s) or symbol(s) of such alternatives must be shown either on the control plate or on a sticker (which must remain legible in normal use and which cannot be detached without being destroyed), to be supplied with the component for attachment next to the control plate.		x	n	x	n	n	n	n	n	n	– see 3.10.1

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
3.10.3.2	In the case of non-original replacement silencers, the code number(s) or symbol(s) of such separate technical units must be shown on a sticker (which must remain legible in normal use and which cannot be detached without being destroyed), to be supplied with the component for attachment next to the control plate.		x	n	x	n	n	n	n	n	n	– see 3.10.1
3.10.3.3	When, pursuant to 3.10.3.1 and 3.10.3.2, non-original parts/components have to be marked, the markings must comply with the provisions of 3.10.1.1 to 3.10.2.2.		x	n	x	n	n	n	n	n	n	– see 3.10.1

Directive 97/24/EG chapter 7			Veh. class acc. to 2002/24/EC, dir. 97/24/EC chapter 7									Remarks
No.	wording of the directive to-date	recommendations for alteration	L1e, A	L2e	L3e, B	L3e, C	L3e, D	L4e	L5e	L6e	L7e	X = existing N = new
	 Figure 1		x	n	x	n	n	n	n	n	n	– see 3.10.1 – Depending of vehicle classes, different components have to be marked

Questions to Vehicle Manufacturers concerning Systems/Measures against Manipulation (unauthorised tampering)

Company, address, contact

Name of the company :	.....	Contact :	.....
Address	.....	Department :	.....
	.....		
Telefon :	.....	Telephone :	.....
email :	.....	Fax :	.....
Internet :	.....	email :	.....

Contents

- Questions concerning category and number of vehicles produced
- Questions concerning the anti manipulation measures taken
  - Manipulation of the engine
  - Manipulation of the transmission
  - Manipulation of the marking

Questions concerning the category and number of vehicles produced

What is the distribution of the produced vehicle models to the different vehicle categories and what numbers of vehicles fall in the different categories?
(Please consider all vehicles up to and including **December 2002**.)

Vehicle category according to directive 97/24/EC, Chapter. 7	Number of models	Number of vehicles produced
A Two wheeled motor vehicles with a design speed of up to 45 km/h. Swept volume of engine up to 50 cm^3 in the case of combustion engines or a maximum continuous power output of 4 kW for electrically powered vehicles.		
B Two wheeled motor vehicles **with or without** side-car, powered by an internal combustion engine with a swept volume of more than 50 cm^3 and up to 125 cm^3 **and / or** a maximum design speed of more than 45 km/h. The power output of the engine must not exceed 11 kW.		
C Two wheeled motor vehicles **with or without** side-car, powered by an internal combustion engine with a swept volume of more than 50 cm^3 **and / or** a design speed of more than 45 km/h. The engine power output must not exceed 25 kW, and the power to weight ratio must not exceed 0,16 kW/kg.		
D Two wheeled motor vehicles **with or without** side-car powered by an internal combustion engine with a swept volume exceeding 50 cm^3 **and / or** a design speed exceeding 45 km/h.		

Questions concerning the anti manipulation measures taken

Please mark the relevant answers or / and fill in the empty fields.

Manipulation of the engine

Nature of manipulation in the area: **cylinder / piston**	Required measures at vehicle categories	Which systems / measures against manipulation are taken?	Which improvements of the measures / systems are possible?	What are the additional **cost** for the measures per vehicle?	How high is the **efficiency** of these measures to prevent manipulation?
Exchange of the unit piston / cylinder (increase swept volume) between approved vehicles	A, B	❑ none ❑ ... ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Re-bore cylinder (increase swept volume)		❑ none ❑ ... ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small

Nature of manipulation in the area: **cylinder / piston**	Required measures at vehicle categories	Which systems / measures against manipulation are taken?	Which improvements of the measures / systems are possible?	What are the additional **cost** for the measures per vehicle?	How high is the **efficiency** of these measures to prevent manipulation?
Installation of thinner head gasket	A, B	❑ none ❑ The thickness of the head gasket of vehicles of the category A is not more than 1.3 mm and not more than 1.6 mm for vehicles of class B ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Installation of a thinner gasket between cylinder and crankcase (on 2-stroke engines)	A, B	❑ none ❑ The thickness of the gasket is not more than 0.5 mm ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Polishing the charge ports at 2-stroke engines		❑ none ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small

Nature of manipulation in the area: **cylinder / piston**	Required measures at vehicle categories	Which systems / measures against manipulation are taken?	Which improvements of the measures / systems are possible?	What are the additional **cost** for the measures per vehicle?	How high is the **efficiency** of these measures to prevent manipulation?
turn the piston 180 ° (2-stroke engines)	A, B	❑ none ❑ Turning the piston has no influence on power or top speed on the vehicles of the classes A and B ❑ ...	❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small

Nature of the manipulation in the area **crankshaft**	Required measures at vehicle categories	Which systems / measures against manipulation are taken?	Which improvements of the measures / systems are possible?	What are the additional **cost** for the measures per vehicle?	How high is the efficiency of these measures to prevent manipulation ?
Machining or replacement of the crankshaft		❑ none ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small

Nature of the manipulation in the area **carburattion**	Required measures at vehicle categories	Which systems / measures against manipulation are taken?	Which improvements of the measures / systems are possible?	What are the additional **cost** for the measures per vehicle?	How high is the efficiency of these measures to prevent manipulation ?
Exchange of the carburettor between approved vehicles	A, B	❑ none ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Alteration of the carburettor setting for example by altering the main jet	A, B	❑ none, power and/or top speed are not significantly increased ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Removement of the throttle stop	A, B	❑ none ❑ no throttle stops are installed ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small

Nature of manipulation in the area **mixture formation**	Required measures at vehicle categories	Which systems / measures against manipulation are taken?	Which improvements of the measures / systems are possible?	What are the additional **cost** for the measures per vehicle?	How high is the efficiency of these measures to prevent manipulation ?
Exchange of the cylinder head between approved vehicles	A, B	❑ none, ... ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Exchange of the intake tube between approved vehicles	A, B	❑ none, ... ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Increased intake area Continued:	B	❑ none ❑ none, power and/or top speed are not significantly increased ❑ The intake tube incorporates a contraction which is fastened to the cylinder with special screws or with tear off screws. The hardness of this contraction is at least 60 HRC, and its thickness at the narrow part is less than 4 mm. ❑ The intake pipe is fastened to	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small

Nature of manipulation in the area **mixture formation**	Required measures at vehicle categories	Which systems / measures against manipulation are taken?	Which improvements of the measures / systems are possible?	What are the additional **cost** for the measures per vehicle?	How high is the efficiency of these measures to prevent manipulation ?
Increased intake area		the cylinder with tear-off or special screws. The thickness of the intake pipe material at its narrowest point is less than 4 mm if made of metal and less than 5 mm if made from flexible material (such as rubber) ❑ The narrowest point of the intake is situated inside the cylinder head ❑ ...			
Polishing the intake		❑ none ❑ ... ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small

Nature of manipulation in the area **mixture formation**	Required measures at vehicle categories	Which systems / measures against manipulation are taken?	Which improvements of the measures / systems are possible?	What are the additional **cost** for the measures per vehicle?	How high is the efficiency of these measures to prevent manipulation ?
Intake port is covered by the piston in TDC (2-stroke engines with membrane valve)	A, B	❑ none ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Removal of the membrane valve (2-stroke engines)	A, B	❑ none ❑ The membrane valve is fastened with special screws or tear-off screws ❑ ... ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Removal of air filter	A, B	❑ none, power and top speed are not significantly increased ❑ ... ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Exchange of air filter		❑ none ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small

Nature of manipulation in the area **exhaust system**	Required measures at vehicle categories	Which systems / measures against manipulation are taken?	Which improvements of the measures / systems are possible?	What are the additional **cost** for the measures per vehicle?	How high is the efficiency of these measures to prevent manipulation ?
Exchange of the exhaust system between approved vehicles (Alteration of diameter and length)	A, B	❑ none ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Altering the diameter of the exhaust system (for example removing restrictions)	A, B	❑ none, power and/or top speed are not significantly increased ❑ No artificial restriction exists at 2-stroke engines ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Alteration of the length of the exhaust system by removal of parts	A, B	❑ none, power and/or top speed are not significantly increased ❑ The length of the exhaust system cannot be altered by removal of parts ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small

Nature of the manipulation in the area **engine control**	Required measures at vehicle categories	Which systems / measures against manipulation are taken?	Which improvements of the measures / systems are possible?	What are the additional **cost** for the measures per vehicle?	How high is the efficiency of these measures to prevent manipulation ?
Exchange of the camshaft between approved vehicles	A, B	❑ none ❑ ... ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Alteration of camshaft		❑ none ❑ ... ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Alteration of the setting of the ignition (ignition timing / mapping)	A, B	❑ none, power and/or top speed are not significantly increased ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small

Nature of the manipulation in the area **engine control**	Required measures at vehicle categories	Which systems / measures against manipulation are taken?	Which improvements of the measures / systems are possible?	What are the additional **cost** for the measures per vehicle?	How high is the efficiency of these measures to prevent manipulation ?
Removal or alteration of the electronic / electric speed limiter	A, B	❑ none, power and/or top speed are not significantly increased ❑ ... ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Removal or alteration of the electronic ignition timing	A, B	❑ none, power and/or top speed are not significantly increased ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Removal or alteration of electric / electronic engine speed limiter		❑ none ❑ ... ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Exchange or alteration of engine-ECU		❑ none ❑ ... ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small

Nature of the manipulation in the area **engine control**	Required measures at vehicle categories	Which systems / measures against manipulation are taken?	Which improvements of the measures / systems are possible?	What are the additional **cost** for the measures per vehicle?	How high is the efficiency of these measures to prevent manipulation ?
Alteration of the engine ECU by wire-in of additional ECUs		❑ none ❑ ... ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Alteration of the electric / electronic engine speed limiter by alteration of the throttle stop		❑ none ❑ ... ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small

Manipulation of the Transmission

Nature of manipulation in the area **Variomatic**	Required measures at vehicle categories	Which systems / measures against manipulation are taken?	Which improvements of the measures / systems are possible?	What are the additional **cost** for the measures per vehicle?	How high is the efficiency of these measures to prevent manipulation ?
Alteration of the transmission ratio by installation of washers or alteration of the friction cones		❑ none ❑ ... ❑ ...	❑	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Alteration of the “gear change speeds” by manipulation of the centrifugal controller		❑ none ❑ ... ❑ ...	❑	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small

Nature of manipulation in the area **chain-sprocket-pulley**	Required measures at vehicle categories	Which systems / measures against manipulation are taken?	Which improvements of the measures / systems are possible?	What are the additional **cost** for the measures per vehicle?	How high is the efficiency of these measures to prevent manipulation ?
Alteration of the transmission ratio by replacement of sprocket or pulley		❑ none ❑ ... ❑ ...	❑	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small

Nature of manipulation in the area **gear box**	Required measures at vehicle categories	Which systems / measures against manipulation are taken?	Which improvements of the measures / systems are possible?	What are the additional **cost** for the measures per vehicle?	How high is the efficiency of these measures to prevent manipulation ?
opening up locked gears for example 6th gear		❑ none ❑ ... ❑ ...	❑	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small

Manipulation of marking

Nature of the manipulation of the **marking**	Required measures at vehicle categories	Which systems / measures against manipulation are taken?	Which improvements of the measures / systems are possible?	What are the additional **cost** for the measures per vehicle?	How high is the efficiency of these measures to prevent manipulation ?
Replacement of the systems which are marked according to directive 97/24/EC, chapter 7	A, B	❑ none ❑ marking is designed to be hard to copy ❑ ... ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small
Replacement of the control plate as required by directive 97/24/EC chapter 7	A, B	❑ none ❑ control plate is designed to be hard to copy ❑ ... ❑ ...	❑ ... ❑ ...	❑ high ❑ medium ❑ small	❑ high ❑ medium ❑ small

Company, address, contact

Name of company	.....	Contact :	.....
Address :	.....	Department :	.....
	.....		
Telephone :	.....	Telephone :	.....
email :	.....	Fax :	.....
Internet :	.....	email :	.....

Contents

Questions about working method and number of offered replacement and tuning parts

What is the percentage of replacement or tuning parts for two wheeled motor vehicles on the turnover of your company? What is the percentage there-of on parts which are not approved for use on public streets?

(Please consider all sales up to **December 2002**.)

Vehicle class according to directive 97/24/EC, chapter 7	Percentage of parts approved for use on public streets	Percentage of parts not approved for use on public streets
A Two wheeled motor vehicles with a design speed of up to 45 km/h. Swept volume of engine up to 50 cm^3 in the case of combustion engines or a maximum continuous power output of 4 kW for electrically powered vehicles.		
B Two wheeled motor vehicles **with or without** side-car, powered by an internal combustion engine with a swept volume of more than 50 cm^3 and up to 125 cm^3 **and / or** a maximum design speed of more than 45 km/h. The power output of the engine must not exceed 11 kW.		
C Two wheeled motor vehicles **with or without** side-car, powered by an internal combustion engine with a swept volume of more than 50 cm^3 **and / or** a design speed of more than 45 km/h. The engine power output must not exceed 25 kW, and the power to weight ratio must not exceed 0,16 kW/kg.		
D Two wheeled motor vehicles **with or without** side-car powered by an internal combustion engine with a swept volume exceeding 50 cm^3 **and / or** a design speed exceeding 45 km/h.		

Questions concerning the anti manipulation measures taken

Please differentiate the numbers of units of exchange and tuning parts which are not for use on public streets according to the vehicle systems and vehicle class, as described in directive 97/24/EC, chapter 7

Vehicle class according to directive 97/24/EC, chapter 7	vehicle system	percentage
A Two wheeled motor vehicles with a design speed of up to 45 km/h. Swept volume of engine up to 50 cm^3 in the case of combustion engines or a maximum continuous power output of 4 kW for electrically powered vehicles.	**total part for engine:**	_____ %
	there of:	
	• piston / cylinder	_____ %
	• carburation	_____ %
	• Intake system (such as air filter)	_____ %
	• exhaust system	_____ %
	• engine control (mechanically or electronically)	_____ %
	total of transmission:	_____ %
	there of:	
	• Variomatic (friction cones and others.)	_____ %
	• gear box	_____ %
	• pulley/sprocket/chain	_____ %

Vehicle class according to directive 97/24/EC, chapter 7	vehicle system	percentage
B Two wheeled motor vehicles **with or without** side-car, powered by an internal combustion engine with a swept volume of more than 50 cm³ and up to 125 cm³ **and / or** a maximum design speed of more than 45 km/h. The power output of the engine must not exceed 11 kW.	**total part for engine:**	_____ %
	there of:	
	• piston / cylinder	_____ %
	• carburation	_____ %
	• Intake system (such as air filter)	_____ %
	• exhaust system	_____ %
	• engine control (mechanically or electronically)	_____ %
	total of transmission:	_____ %
	there of:	
	• Variomatic (friction cones and others.)	_____ %
	• gear box	_____ %
	• pulley/sprocket/chain	_____ %

Vehicle class according to directive 97/24/EC, chapter 7	vehicle system	percentage
C Two wheeled motor vehicles **with or without** side-car, powered by an internal combustion engine with a swept volume of more than 50 cm³ **and / or** a design speed of more than 45 km/h. The engine power output must not exceed 25 kW, and the power to weight ratio must not exceed 0,16 kW/kg.	**total part for engine:** **there of:** • piston / cylinder • carburation • Intake system (such as air filter) • exhaust system • engine control (mechanically or electronically) **total of transmission:** **there of:** • Variomatic (friction cones and others.) • gear box • pulley/sprocket/chain	_____ % _____ % _____ % _____ % _____ % _____ % _____ % _____ % _____ % _____ %

Vehicle class according to directive 97/24/EC, chapter 7	vehicle system	percentage
D Two wheeled motor vehicles **with or without** side-car powered by an internal combustion engine with a swept volume exceeding 50 cm³ **and / or** a design speed exceeding 45 km/h.	**total part for engine:**	_____ %
	there of:	
	• piston / cylinder	_____ %
	• carburation	_____ %
	• Intake system (such as air filter)	_____ %
	• exhaust system	_____ %
	• engine control (mechanically or electronically)	_____ %
	total of transmission:	_____ %
	there of:	
	• Variomatic (friction cones and others.)	_____ %
	• gear box	_____ %
	• pulley/sprocket/chain	_____ %

Vehicle class according to directive 97/24/EC, chapter 7	vehicle system	percentage
A-D 3- and 4-wheeled motor vehicles of the classes A to D	**total part for engine:**	_____ %
	there of:	
	• piston / cylinder	_____ %
	• carburation	_____ %
	• Intake system (such as air filter)	_____ %
	• exhaust system	_____ %
	• engine control (mechanically or electronically)	_____ %
	total of transmission:	_____ %
	there of:	
	• Variomatic (friction cones and others.)	_____ %
	• gear box	_____ %
	• pulley/sprocket/chain	_____ %

Harley Davidson Motorcycles Co.Inc.
3700 West Juneau Avenue

USA-53208 Milwaukee, WI

Attention: scheduled business – please pass on to the relevant people in your house!

- - +49(0511)986-1598 SF-H/Di/Bn/Le 2003-04-09

Study on measures against unauthorized manipulation – Anti Tampering Devices - and relevant directives for 2 and 3 wheeled motor vehicles by order of the European Commission, Enterprise Directorate-General

Dear Ladies and Gentlemen,

within the scope of the above mentioned study, we have been undertaken to carry out a questionnaire aimed at vehicle manufacturers and at manufacturers / dealers of parts for 2 and 3 wheeled motor vehicles, at European approval authorities and ministries, and at other relevant manufacturers / organisations.
We therefore kindly request, that you take some moments to fill in the attached questionnaire. It would be most helpful if you could please return the completed questionnaire to us by **May 15th 2003**, using the envelope provided.

Thank you very much for your cooperation!

Kind regards

TÜV NORD STRASSENVERKEHR GMBH
Motor Vehicle System and Traffic Routing Technique
Test Laboratory Motor Vehicle Engineering

Klaus Dittmar
Director

Enclosure

TÜV NORD STRASSENVERKEHR GMBH
Motor Vehicle System and Traffic Routing Technique
Test Laboratory Motor Vehicle Engineering

TÜV NORD STRASSENVERKEHR GMBH • AM TÜV 1 • 30519 Hannover

Ministère de l'Equipement, des transports
et du tourisme Direction de la Sécurité
et de la Circulation routière Sous-Direction
de la Réglementation technique des véhicules
L'Arche de la Défense, Paroi Sud

F-92055 Paris La Défense Cedex 04

Attention, business dead line involved! Please pass on to the respective person(s) in your institution!

		Direct Dial	Our Reference	Date
-	-	+49 511 986-1548	SF-H/Di/Bn/Le	2003-04-09

Study on measures against unauthorized manipulation - Anti Tampering Devices - and relevant directives for 2- and 3-wheeled motor vehicles by order of the European Commission, Enterprise Directorate-General

Dear Ladies and Gentlemen,

Within the scope of the above mentioned study, we have been undertaken to carry out a questionnaire aimed at vehicle manufacturers and at manufacturers/dealers of parts for 2- and 3-wheeled motor vehicles, at European approval authorities and ministries, and at other relevant manufacturers/organisations.
In this connection, we should like to ask you to answer the following questions:

- Are deficiencies/irregularities within the scope of technical inspections or technical roadside inspection of the roadworthiness with respect to manipulation or engine capacity, maximum speed and noise characteristics (e.g. silencer replacement) of two- and three-wheeled motor vehicles known to you?
- Can you name vehicle manufacturers and –types to us?
- Is there any documentation (test reports/photos) in your institution on this subject?
- In the event that there is additional information concerning this subject in your institution, we would be glad if you could forward it to us by **May 15, 2003,** at the latest.

For your information, we have enclosed the questionnaire mailed to the manufacturers.

Thank you very much for your cooperation!

Kind regards

TÜV NORD STRASSENVERKEHR GMBH
Motor Vehicle System and Traffic Routing Technique
Test Laboratory Motor Vehicle Engineering

Klaus Dittmar
Director

Enclosure

Test Laboratory Motor Vehicle Engineering, accredited according to DIN EN ISO / IEC 17025 and DIN EN 45001

by the Accreditation Body of the German Federal Motor Vehicle Registration Agency (KBA) under DAR-Register-No.: KBA-P 00004-96

Deutscher Akkreditierungs Rat DAR

EUROPEAN COMMISSION
ENTERPRISE DIRECTORATE-GENERAL

Single market, implementation and legislation for consumer goods
Automotive industry

002538 10.03.2003

Brussels,
ENTR/F/5 D(2003) 755120

To Whom It May Concern

Subject: **Study on Anti-Tampering Devices relating to Two or Three-Wheel Motor Vehicles**

The EC legislative type-approval framework provides for the type-approval of whole vehicles or components, technical systems and units. The type-approval framework directive 92/61/EEC and the series of separate directives subsequently enacted thereunder establishes the various construction, design and performance requirements which need to be fulfilled before new two-or three-wheeled motor vehicles can be type-approved. Type-approval constitutes a fundamental pre-requisite of vehicle sale, registration or entry into service.

The type-approval requirements relating to anti-tampering measures are laid down in Chapter 7 of Directive 97/24/EC of the European Parliament and of the Council on certain components and characteristics of two- or three-wheel motor vehicles.

Furthermore, Article 2 of Directive 97/24/EC stipulates that the Commission shall carry out a detailed study in order to ascertain whether or not the anti-tampering measures in force can be considered appropriate, inadequate or too extreme in the light of the intended aims.

The objective of the study is to provide the European Commission with a technical analysis, which will assess the following factors:

- The role of anti-tampering devices in two or three-wheeled motor vehicles. Information will be provided on current and prospective developments in anti-tampering technology.
- The effective contribution made by anti-tampering measures in terms of speed, noise and emissions reductions since the entry into force of Directive 97/24/EC;
- Barriers to the effectiveness of current legislative provisions and possible remedial actions;
- Recommendations in terms of amendments to the present legislative framework.

Following a general invitation to tender the contract has been awarded to

TÜV NORD STRASSENVERKEHR GmbH,
Am TÜV 1,
30519 Hannover, Germany.

The project leader is Mr. Klaus Dittmar.

An important part of the study will be the gathering of information. This will be done by personal contacts as well as sending structured questionnaires to vehicle and component manufacturers, national type-approval authorities, national transport/highway authorities, retailers, vehicle purchasers and other interested parties.

In this respect TÜV NORD STRASSENVERKEHR GmbH will need your collaboration and assistance to complete their task successfully. Therefore the European Commission seeks your co-operation with regard to the realisation of this study.

We thank you in advance for your assistance.

Yours sincerely,

Per-Ove Engelbrecht

Name	Poste Code / Country	City
Aeon Motor Co. Ltd.	Taiwan	Lane 54 Tainan
Aprilia Motorrad GmbH	40547	Düsseldorf
Aprilia S.p.A.	I-30033	Noale (VE)
Beldeyama Motorlu Vasitala	P.K.1 8086	Istanbul-TURKEY
Belgarda S.p.A.	I-20050	Gerno di Lesmo (MI) Italy
Benelli S.p.A.	I-61100	Pesaro
Betamotor Deutschland GmbH	74889	Sinsheim-Eschelbach
Betamotor S.p. A.	I-50067	Rignano/Arno
BMW Motorrad	80788	München
Bombardier-Rotax GmbH Motorenfabrik	A-4623	Gunskirchen
Buell Motor Company Inc.	USA-53120	East Troy, WI
Bultaco Sherco sarl.	E-08140	Caldes de Montbul
Chun Lan Group	China	Tai Zhou, Jiang Su Province
CPI Motor Co.	China	TA-LI City Talchung, Taiwan
Daelim Motor Co. Ltd.		Chung-Ku, RDK-Seoul
DNEPR, KMZ Kiev Motorcycle Zavod	4119	Kiev/Ukraine
Ducati Motor Deutschland GmbH	50999	Köln-Rüdenkirchen
Ducati Motor S.p.a.	I-40132	Bologna
ENFIELD INDIA , Enfield India Ltd		Madras. Indien

Name	Poste Code / Country	City
Gas Gas motos S.A.	E-17458	Formells de la Selva
Gilera Piaggio C.S.p.a.	I-56025	Pontedora/Pisa
Gorgolis S.A.	GR-42100	Trikala
Harley Davidson Motorcycles Co.Inc.	USA-53208	Milwaukee, WI
Her Chee Industrial Co. Ltd.	Taiwan	Yi-Chu Hsiang, Chia - Yi Hsien
Honda Anadolu Motosiklet Uretim Ve Pazarlama A.S.	TR-81420	Istanbul (Turkey)
Honda Italia Industriale S.p.A.	I-00144	Rom
Honda Italia Industriale S.P.A.	I-66040	Piazzano di Atessa (Italy)
Honda Motor Co. Ltd.	J-Minatoku	Tokyo 107
Honda of America Manufactoring	USA-43040	Marysvllle, Ohio
Huanan Motors Industrial Co.Ltd.	511480	P.R. China
Husaberg Motor AB	SE-69572	Röfors
Husqvarna MV Agusta Motor S.p.A.	I-21024	Biandronno (VA)
Hyosung Motors Division	77, Sungsan Dong	ROK-Süd-Korea
Irbit Motorcycle Plant	623851	Irbit /Russland
Italjet S.p.A.	I-40068	San Lazzaro di Savena
Jawa	CZ-25741	Tynec Nad Sazavou
Jincheng Corporation	210002	Nanjing (China)

Name	Poste Code / Country	City
Kawasaki Heavy Industries Ltd. Consumer Product Group	J-Hyogo Pref	673 Japan
KTM Sportmotorcycle AG	A-5230	Mattighofen
Kymco - Kwang Yang Motor Co. Ltd.		ROC-Kaochsiung
L.E.M Motor S.R.L.	I-4069	Zola Predosa (BD)
LML-Vespa Limited		IND-208022 Kampur
Malaguti S.p.A.	I-40068 S	Lazzarro di Savena /BO
MBK Industries	F-02100	Saint-Quentin
Montesa Honda SA.	E-08130	Santa Perpetua de Mogoda (B)
Motive Power Industry Co. Ltd.		Chang Hwa Hsien, Taiwan, ROC
Moto Guzzi G.B.M.S.p.A.	I-22954	Mandello del Lario
Moto Laverda S.R.L. International I.m.La.	I-36010	Zane (Vicenca)
MV Agusta Motor S.p.A.	I-21024	Biandronno (VA)
MZ Motorrad- und Zweiradwerk GmbH	94405	Zschopau-Hohndorf
Nacional Motor S.A.,	E-08107	Martorelles (Barcelona) Spain
Peugeot Motorcycles Mandeure	F-25706	Velentigney cedex
Piaggio C.S.p.A.	I-56025	Pontedora/Pisa
Rieju S.A. Motocycles	E-17600	Figueras (Girona)
Sachs Fahrzeug- und Motortechnik GmbH	90441	Nürnberg

Name	Poste Code / Country	City
San Yang Industry Co. Ltd.		Taipei/Taiwan (R.O.C.)
Sanyang Industry Co. Ltd.		Hsinchu, Taiwan R.O.C.
Siam, Siamoto srl	I-81030	Gricignano di Aversa, Italy
Simson Motorrad GmbH & Co. KG	98529	Suhl
Standard Motor Co.		Taipei/Taiwan (R.O.C)
Suzuki Motor CO. Ltd.	J-43201	Hamamatsu
Suzuki Motor Espana ,S.A.	E-33392	Gijon Asturias
Taiwan Golden Bee Co. Ltd.		Kaohsiung Hsien, Taiwan, R.O.C
Tomos	SLO-6000	Koper (Slovenija)
Tomos Nederland Trading Company B.V.	NL- 8161	PG, Epe
Triumph Motorcycles Limited	GB-LE10 38S	Hinckley, Leicestershire
Ural, TC Moto Ural		RUS-Irbit
Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	J-2500	Shinghai Iwata, Shizuoka 438-8501
Yamaha Motor Deutschland GmbH	41468	Neuss
Yamaha Motor Espana S.A.	E-08184	Palau de Plegamans, Barcelona
Yamaha Motor Europe N.V.	NL-1119	NC Schiphol-Rijk

Name	Poste Code / Country	City
A & L Honda GL-Zubehör Bikers Point GmbH	79336	Herbolzheim
ABM Fahrzeugtechnik GmbH	79206	Breisach
AKE-Elektronik	73230	Kirchheim/Teck
Alan Electronics GmbH	22952	Lütjensee
Alpha technik	83071	Stephanskirchen
Alpha Technik	83071	Stephanskirchen
Arrow Special Parts S.p.a.	I-6016	San Giustino PG - Italy
AVIACOMPOSITI RACING	I-00043	Ciampino - Roma -Italia
Baehr GmbH & Co.KG Motorradzubehör	66953	Pirmasens
Bagster Deutschland	35066	Frankenberg
BD Motorradzubehör Deutschland GmbH	41063	Mönchengladbach
BDK Racing	NR16 1ER	Norwich,
BEA Büse MX-Import GmbH	52159	Roetgen
BERCELLA s.r.l.	I-43040	Varano Melegari (PR) Italy
Bike-Lift Matthies Motorradteile	20097	Hamburg
BOS Auspuff GmbH	49828	Neuenhaus
BRS Race & Sportswear Vertriebs GmbH	09212	Limbach-Oberfrohna

Name	Poste Code / Country	City
Brune GmbH	48291	Telgte
Büse MX-Import GmbH	52159	Roetgen
Chain-Checker GmbH	53489	Sinzig
Chatterbox	41468	Neuss
Corbin Germany	66849	Landstuhl
Custom Chrome Europe	55543	Bad Kreuznach
Dainese Deutschland GmbH	80807	München
Dimo Kunststofftechnik	43474	Ahrweiler
Dreamparts	47574	Goch
Dynojet Micron Systems	90765	Fürth-Sack
Eberhardt Motorsport	83451	Piding
Enduro-Zentrale München	81476	München
EURO RACING	I-61011	Gabicce Sea (PU)
Fechter Drive Motorsport GmbH	73231	Wellheim/Teck
Freeride Bike & Board Shop Sittard	NL-6134 AG	SITTARD
G & Z Zubehör GmbH	72072	Tübingen
G.G. Motorbike Point	79364	Malterdingen
Galassetti Luciano	I-00169	Roma
Germot GmbH	63303	Dreieich-Sprendlingen
Gimbel Auto- und Motorradtechnik GmbH	79206	Breisach

Name	Poste Code / Country	City
Götz GmbH	72406	Bisingen
GST NEDERLAND B.V	NL-1764	BREEZAND
HARLEY TRADING POST A.R. HARLEY & SONS	East Sussex TN33 9DB	Crowhurst
Haveba TWS Central Europe	72461	Albstadt-Onstmettingen
Heesch & Carstensen	24885	Sieverstedt
Hein Gericke GmbH	40589	Düsseldorf
Italo-Shop Neuss	41569	Rommerskirchen
JAMA Engineering B.V.	NL-3274	LH Heinenoord, The Netherlands
Jamparts Fahrzeugtechnik Vertriebs GmbH	71262	Hemmingen
K.L. Didt	55469	Mutterschied
Kainzinger - The Tuning Company	68766	Hockenheim
Kerb-Konus Vertriebs GmbH	92224	Arnberg
Langenscheidt GmbH Motorradtechnik & -zubehör	45739	Oer-Erkenschwick
LeoVince	I-12066	Monticello d'Alba (Cn) Italy
Louis Detlev Louis Motorradvertriebs GmbH	21035	Hamburg
MAGNUM PARTS	F-91602	91602 SAVIGNY / ORGE Cedex FRANCE
Martin Dunn Import	33442	Herzebeck-Clarholz

Name	Poste Code / Country	City
Matthies Motorradteile	20097	Hamburg
Mefo Sport GmbH	97520	Röthlein
Megamotor	I-40033	Casalecchio di Reno (BO)
Metisse Team Metisse GmbH	71549	Auenwald-Hohnweiler
MGM-Bikes Siggi Müller	34431	Marsberg-Meerhof
Mobil-Tech oHG	78459	Spaichingen
mobil-tech oHG	76549	Spaichingen
Moto Parts	47809	Krefeld
Moto-Parts-Krämer	55774	Baumholder
Moto-Parts-Krämer	55774	Baumholder
Motoport Deutschland GmbH & Co.KG	36316	Varel
MotoPro Sport	NL - 9641 CL	Veendam
Motorbox	A-2481	Achau
Niemann & Frey GmbH	47809	Krefeld
On Two Wheels	72403	Bisingen
Pandikow Motorcycle + Scooter	65554	Limburg-Ahlbach
Peter Böhm Fahrzeugtechnik	75172	Pforzheim
Polo Expressversand GmbH & Co.KG	40589	Düsseldorf
RM PRODUCT LINE Prod. und Vertrieb	A-8054	Graz

Name	Poste Code / Country	City
RW Superbike-Shop	82487	Garmisch-Partenkirchen
Schüller GmbH	68649	Groß-Rohrheim
Sebimoto Germany	63179	Oberhausen
Speed Products GmbH	46165	Münster
Sportzubehör Hagen	90764	Fürth-Sack
Stein-Dinse GmbH	38112	Braunschweig
Tecflow Ceratech Vertrieb	56459	Langenhahn
Top Performances Lust Mororrad GmbH	50677	Köln
VANCE & HINES EUROPE	S-72122	VÄSTERÅS, SWEDEN
W & W Cycles AG	97076	Würzburg
Winklbauer	84529	Asten
WPRtec design GmbH	37671	Höxter
WPRtec design GmbH	37671	Höxter
Zupin Moto-Sport Handels AG	83301	Traunreut

Name	Poste Code / Country	City
France (E2)		
Ministère de l'Equipement, des transports et du tourisme Direction de la Sécurité et de la Circulation routière Sous-Direction de la Réglementation technique des véhicules	F-92055	Paris La Défense Cedex 04
Italy (E3)		
Ministero dei Trasporti e della Navigazione Dipartimento dei Trasporti Terrestri Unità di Gestione Motorizzazione e Sicurezza dei Trasporti Terrestri MOT.2	I-00157	Roma
Ministero dei Lavori Pubblici Direzione Generale del Coordinamento Territoriale Ispettorato Generale Circolazione e Traffico	I-00157	Roma
Netherlands (E4)		
RDW Centrum voor voertuigtechniek en informatie	NL-2700 AT	Zoetermeer
Sweden (E5)		
Vägverket (Swedish National Road Administration) Vehicle Standards Division	S-781 87	Borlänge

Name	Poste Code / Country	City
Belgium (E6)		
Ministère des Communications et de l'Infrastructure Administration de la Réglementation de la Circulation et de l'Infrastructure (A.R.C.I.) Service circulation routière – Direction technique	B-1040	Bruxelles
Hungary (E7)		
Közlekedési Föfelügyelet (General Inspection of Transport)	H-1066	Budapest
Czech Republic (E8)		
Ministerstvo dopravy a spoju Ceské republiky (Ministry of Transport of the Czech Republic)	CZ-110 15	Prague 1
Spain (E9)		
La Subdirección General de Seguridad Industrial Ministerio de Industria y Energía	E-28046	Madrid
Yugoslavia (E10)		
Federal Administration for Standardization (Savezni zavod za standardizaciju)	YU-11000	Beograd

Name	Poste Code / Country	City
United Kingdom (E11)		
Vehicle Certification Agency 1, The Eastgate Office Centre	BS5 6XX, UK	Bristol
Austria (E12)		
Bundesministerium für Verkehr, Innovation und Technologie	A-1031	Wien
Luxembourg (E13)		
Ministère des transports	L-2910	Luxembourg
Switzerland (E14)		
Office fédéral des routes Division Circulation routière Homologation des véhicules (Section of vehicle homologation)	CH-3003	Berne
Norway (E16)		
Vegdirektoratet Trafikant- og kjøretøyavdelingen	N–0033	Oslo
Finland (E17)		
Ajoneuvohallintokeskus (Vehicle Administration Centre)	FIN-00101	Helsinki

Name	Poste Code / Country	City
Denmark (E18)		
Justitsministeriet Faerdselssikkerhedsafdelingen Typegodkendelsessektionen	DK-2370	Herlev
Romania (E19)		
Ministerul Transporturilor Directia generala a Transporturilor Rutiere Directia Réglementari (Division Réglementation)	RO-77113	Bucuresti
Ministerul Transporturilor Registrul Auto Român – R.A. (Registre Automobile Roumain)	RO-78341	Bucuresti
Poland (E20)		
Ministerstwo Infrastuktury (Ministry of Infrastructure)	PL-00-928	Warszawa
Portugal (E21)		
Direcção-Geral de Viação DSCV/DV	P-1050	Lisboa

Name	Poste Code / Country	City
Russian Ferderation (E22)		
Komitet Rossijskoj Federatsii po standartizatsii, metrologii i sertifikatsii (Gossstandart Rossii) (Committee of the Russian Federation for Standardization, Metrology and Certification)	RUS-117049	Moscow
Greece (E23)		
Ministry of Transport and Communications General Directorate for Transport Vehicles Technology Directorate		Athens, GREECE
Croatia (E25)		
State Office for Standardization and Metrology (DZNM)	HR-41000	Zagreb
Slovenia (E26)		
Ministrstvo za promet – Direkcija Republike Slovenije za ceste (Ministry of Transport-Directorate of the Republic of Slovenia for Roads)	SLO-1000	Ljubljana
Slowakei (E27)		
The Ministry for Transport, Posts and Telecommunications of the Slovak Republic	SK-81005	Bratislava

Name	Poste Code / Country	City
Republic of Belarus (E28)		
Committee on Standardization, Methodology and Certification (Belstandart)	SU-220053	Minsk
Estonia (E29)		
Estonian National Motor Vehicle Registration Centre	EE-12618	Tallinn
Bosnia-Herzegovina (E31)		
Institute for Standardization, Metrology and Patents of Bosnia and Herzegowina (Zavod za standardizaciju, meritelstvo i patente Bosne i Hercegovine)	BIH-71000	Sarajewo
Latvia (E32)		
Road Traffic Safety Directorate	LV 1001	Riga
Turkey (E37)		
Sanayi ve Ticaret Bakanligi Sanayi Genel Müdürlügü	06 520 TR-	Ankara

Name	Poste Code / Country	City
Macedonia (E40)		
Service of Standardization and Metrology (Ministry of Economy)	1000	Skopje
Japan (E43)		
Ministry of Land, Infrastructure and Transport		Tokyo 100-8918 Japan

Name	Poste Code / Country	City

France (E2)

Télédiffusion de France Commission d'agrément des dispositifs antiparasitages pour moteurs thermiques	F-92542	Montrouge Cedex
Direction régionale de l'Industrie et de la Recherche et de l'environnement de la Région d'Ile de France	F-75100	Paris Cedex 04
Laboratoire central des industries électriques (L.C.I.E.)	F-92260	Fontenay-aux-Roses
Laboratoire de l'Union technique de l'automobile, du motocycle et du cycle (U.T.A.C.)	F-91310	Linas Montlhéry
Laboratoire national d'essais du Conservatoire des Arts et Métiers	F-75015	Paris

Name	Poste Code / Country	City
Italy (E3)		
Centro Superiore Ricerche e Prove Autoveicoli e Dispositivi del Ministero dei Trasporti e della Navigazione per Lazio, Umbria e Sardegna	I-00138	Roma
Centro Prove Autoveicoli (C.P.A.) del Ministero dei Trasporti e della Navigazione per Emilia-Romagna e Toscana	I-40131	Bologna
Centro Prove Autoveicoli (C.P.A.) del Ministero dei Trasporti e della Navigazione per Milano, Como, Sondrio, Bergamo, Pavia e Varese	I-20149	Milano
Centro Prove Autoveicoli (C.P.A.) del Ministero dei Trasporti e della Navigazione per Campania, Calabria e prov. Potenza	I-80021	Napoli
Centro Prove Autoveicoli (C.P.A.) del Ministero dei Trasporti e della Navigazione per Piemonte, Val d'Aosta e Liguria	I-10036	Settimo Torinese
Centro Prove Autoveicoli (C.P.A.) del Ministero dei Trasporti e della Navigazione per Veneto e Friuli-Venezia Giulia	I-37135	Verona
Centro Prove Autoveicoli (C.P.A.) del Ministero dei Trasporti e della Navigazione per Marche, Abruzzo e Molise Villa Raspa di Spoltore	I-65010	Pescara
Centro Prove Autoveicoli (C.P.A.) del Ministero dei Trasporti e della Navigazione per prov. Palermo, Agrigento, Caltanissetta e Trapani	I-90139	Palermo

Name	Poste Code / Country	City
Netherlands (E4)		
N.V. KEMA Registered Quality Nederland B.V.	NL-6800 ET	Arnheim
TNO-AUTOMOTIVE	NL-2600 JA	Delft
Sweden (E5)		
Sveriges Provnings- och Forskningsinstitut AB (Swedish National Testing and Research Institute)	S-501 15	Boras
AB Svensk Bilprovning (Swedish Motor Vehicle Inspection Company)	S-162 15	Vällingby
Statens väg- och transportforskningsinstitut (Swedish Road and Transport Research Institute)	S-581 95	Linköping
MTX AB	S-136 23	Haninge
Svensk Maskinprovning AB	S-754 50	Uppsala
Centaur AB	S-422 43	Hisingsbacka

Name	Poste Code / Country	City
Belgium (E6)		
Laboratoire central d'électricité (LABORELEC)	B-1630	Linkebeek
Institut Belge pour la Sécurité Routière (I.B.S.R.)	B-1130	Bruxelles
AIB-VINCOTTE-INTER (A.V.I.)	B-1160	Bruxelles
Laboratoire des Produits Pétroliers, Moteurs et Véhicules (P.P.M.V.)	B-1800	Vilvoorde (Peutie)
Institut Scientifique du Verre	B-6000	Charleroi
BELCOMLAB	B-1000	Bruxelles
Apragaz	B-1080	Bruxelles
Laboratorium Soete voor Weerstand van Materialen en Lastechniek Professor A. Vinckier	B-9000	Gent
Bureau Veritas N.V.	B-2018	Antwerpen
ANPI–NVBB	B-1348	Louvain-la-Neuve

Name	Poste Code / Country	City
Hungary (E7)		
Magyar Elektrotechnikai Ellenörzö Intézet Kft (The Hungarian Electrotechnical Controlling Institute Ltd.)	H-1132	Budapest
Autóipari Kutató és Fejlesztö Rt. (Research and Development Company for Automotive Industry)	H-1115	Budapest
FM Müszaki Intézet (Hungarian Institut of Agricultural Engineering)	H-2100	Gödölló
Közlekedéstudományi Intézet Rt. (Institute for Transport Sciences Co.)	H-1119	Budapest
Müszaki Biztonsági Föfelügyelet (Technical Safety Inspectorate)	H-1012	Budapest
TÜV Hannover-KTI Kft. (TÜV Hannover KTI Technical Service and Controlling Co. Ltd.)	H-1119	Budapest
Müszaki Biztonsági Vizsgáló és Tanúsitó Intézet Kft. (Testing and Certifying Institute for Technical Safety)	H-1012	Budapest

Name	Poste Code / Country	City
Czech Republic (E8)		
Elektrotechnicky´ zkušební ústav (Electrotechnical Testing Institute)	CZ-171 02	Prague – Troja
Ústav pro vy´zkum motorovy´ ch vozidel, s. r. o. (Motor Vehicle Research Institute) (Institut de Recherches de l'Automobile)	CZ-180 68	Prague 9
Ústav silnicˇní a me stské dopravy a. s. (Research Institute of Road and Urban Transport, Comp.)	CZ-118 20	Prague 1
Spain (E9)		
Laboratorio Central Oficial de Electrotécnica Escuela Técnica Superior de Ingenerios Industriales	E-28006	Madrid
Laboratorio de Automobiles del Patronato de Laboratorios Industriales Escuela Técnica Superior de Ingenieros Industriales	E-28006	Madrid
Instituto Nacional de Técnica Aeroespacial „Esteban Terradas" INTA	E-28006	Madrid
Instituto de Investigación Aplicada del Automóvil IDIADA Universidad Politécnica de Cataluña	E-08028	Barcelona

Name	Poste Code / Country	City
United Kingdom (E11)		
Vehicle Certification Agency 1, The Eastgate Office Centre	BS5 6XX, UK	Bristol
British Standards Institution		Hertfordshire, UK
ERATechnology Limited	KT22 75A, UK	Surrey
Silsoe Research Institute	MK45 4HS, UK	Bedford
Austria (E12)		
TÜV Österreich Geschäftsbereich Kraftfahrzeugtechnik und Verkehr	A-1230	Wien
Bundesprüfanstalt für Kraftfahrzeuge	A-1210	Wien
Technische Universität Wien Institut für Verbrennungskraftmaschinen und Kraftfahrwesen	A-1060	Wien
Technische Versuchs- und Forschungsanstalt der TU Wien	A-1014	Wien
Technische Universität Graz Institut für Verbrennungskraftmaschinen und Thermodynamik	A-8010	Graz
Technischer Überwachungsverein Österreich	A-1015	Wien
Österreichisches Forschungszentrum Seibersdorf GmbH	A-2444	Seibersdorf
Fachhochschul-Studiengang Fahrzeugtechnik/Automotive Engineering der Technikum Johanneum GmbH	A-8020	Graz

Name	Poste Code / Country	City
Luxembourg (E13)		
Société nationale de contrôle technique – Homologation	L-5201	Sandweiler
TÜV Rheinland Luxembourg GmbH	L-1265	Luxembourg
Luxcontrol S. A.	L-4004	Esch-sur-Alzette
UTAC International S.A.R.L.	L-6914	Roodt-sur-Syre
Switzerland (E14)		
metas Office fédéral de métrologie et d'accréditation (Swiss Federal Office of Metrology and Accreditation)	CH-3084	Berne-Wabern
Dynamic Test Center (DTC) c/o Ecole d'ingénieurs de Bienne (School of Engineering)	CH-2537	Vauffelin
Laboratoire fédéral d'essai des matériaux et de recherches (Federal Materials Testing and Research Institute)	CH-9001	St. Gallen
Laboratoire fédéral d'essai des matériaux et de recherches Moteurs (Section of Engines)	CH-8600	Dübendorf
Haute école spécialisée bernoise Ecole d'ingénieurs de Bienne Service des émissions (University of Applied Sciences; Biel School of Engineering and Architecture; Emissions)	CH-2560	Nidau
Office fédéral des routes Division principale de la circulation routière Service d'homologation (Section of Type Approvals)	CH-3003	Berne, le lieu de contrôle sera déterminé cas par cas

Name	Poste Code / Country	City
Norway (E16)		
Teknologisk Institutt Adveling for Kjøretøyteknikk	N–0131	Oslo
Televerkets Sentraladministasjon Fagenhet for Radiostøy	N–0130	Oslo
Finland (E17)		
VTT Communities and Infrastructure Transport Research	FIN-02044	VTT (Espoo)
VTT Automation/ Safety Engineering	FIN-33101	Tampere
Teknillinen korkeakoulu, polttomoottorilaboratorio (Helsinki University of Technology, Internal Combustion Engine Laboratory)	FIN-02150	Espoo
VTT Energy/Engine Technology	FIN-02044	VTT (Espoo)
Test Center Tiilila Oy (TCT)	Fin-00180	Helsinki
VTT Automation/Risk Management	FIN-33101	Tampere
Denmark (E18)		
Road Safety and Transport Agency Type Approval	DK-1304	Copenhagen K

Name	Poste Code / Country	City
Romania (E19)		
Institutul National de Autovehicule Rutiere – INAR S.A. (Institut national de recherche pour des véhicules automobiles)	RO-2200	Brasov
Centrul de studii pentru autoturisme – CESAR S.A. (Centre d'études pour voitures particulières)	RO-0401	Colibasi – Pitesti
Institutul de Masini termice – MASTER S.A. (Institut de recherche pour moteurs thermiques)	RO-77538	Bucuresti
Institutul National de Cercetare-Dezvoltare pentru Masini si Instalatii destinate Agriculturii si Industriei Alimentare (Institut national de recherche-Dévélopment pour les machines et installations destinés à l'agriculture et l'industrie alimentaire)	RO-71592	Bucuresti
Centrul Tehnic pentru Automobile Craiova (CETAC) (Centre technique pour automobiles Craiova)	RO-1100	Craiova
Centrul de Experimentari si Studii pentru Automobile CESAR S.A. (Centre d'experiments e d'études pour voitures particulières)	RO-0425	Campulung – Muscel

Name	Poste Code / Country	City
Poland (E20)		
Instytut Transportu Samochodowego (Motor Transport Institute)	PL-03-301	Warszawa
Przemysłowy Instytut Motoryzacji (PIMOT) (Automotive Industry Institute)	PL-03-301	Warszawa
Osrodek Badawczo-Rozwojowy Przemyslu Oponiarskiego (OBR PO) (Research and Development Centre of Tyre Industry)	PL-61-361	Poznan
Portugal (E21)		
Instituto Português da Qualidade Divisão de Marcas	P-2825	Monte de Caparica

Name	Poste Code / Country	City
Russian Federation (E22)		
Nauchno-issledovatelskij Centr po ispytanijam i dovodke avtomototekhniki (Centralnyj avtopoligon) (The Scientific Research Centre for Automotive (Central Proving Ground))	RUS-141800	Moscovskaya Oblast’
Nauchno-issledovatelskij i experimentalnyj institut avtomobilnoj elektroniki i elektrooborudovanija (Scientific Research and Experimental Institute for Automotive Electronics and Electrical Equipment)	RUS-105187	Moscow
Nauchno-issledovatelskij institut shinnoj promyshlennosti (The Scientific Research Institute of Tyre Industry)	RUS-105118	Moscow
Gosudarstvennyj nauchnyj centr Rossijskoj Federacii po avtomobilestroeniju NAMI – issledovatelskij centr (State Scientific Centre of the Russian Federation for Automobile Construction – NAMI Testing Centre)	RUS-125437	Moscow
Ispytatelnyj tsentr mototransportnykh sredstv Aktsionernogo obshchestva „Motoprom“ (Motor Vehicle Research Centre of „Motoprom“)	RUS-142207	Moscow Oblast’
Tsentr „Steklosertifikat“ (Steklosertificat Centre)	RUS-410812	Saratov

Name	Poste Code / Country	City
Slovenia (E26)		
RTI d.o.o.	SLO-2000	Maribor
TOMOS-INSTITUT	SLO-6000	Koper
Slowakei (E27)		
VIPOTEST, Ltd., Partizánske Service Púchov	SK-020 32	Púchov
WUSAM, Ldt. Research and Development Institute of Machines and Machineries	SK-961 50	Zvolen
Testing Institute for Transport and Construction Engineering	SK-011 23	Zilina
EXAKTA, Ltd. Testing Institute for the Transport and Construction Engeneering	SK-040 01	Kos˘ice
Republic of Belarus (E28)		
Byelorussian State Polytechnical Academy	SU-220027	Minsk
Minsk Moped and Velocipede Factory Collective Enterprise	SU-220765	Minsk
Minsk Motor Factory Production Association	SU-220829	Minsk
„Testmash“ Testing Centre	SU-220072	Minsk

Name	Poste Code / Country	City
Latvia (E29)		
OU˜ Tehnosert	EE-0001	Tallinn
Turkey (E37)		
Türk Standartlari Enstitüsü (TSE)	06 100 TR-	Ankara
Istanbul Teknik Üniversitesi (ITU) Otomotiv Ana Bilim Dali	80 191 TR-	Istanbul
Macedonia (E40)		
Faculty of Mechanical Engineering	1000	Skopje
Japan (E43)		
Automobile Type Approval Test Division National Traffic Safety and Environment Laboratory		Tokyo 182-0012 Japan

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e01	*92/61*	0082	KTM (A)	A	6007	VBK	L3e	B	125	KTM 2T-EXE	KTM 125 EXE	KTM Sportmotorcycle AG, Harlochnerstraße 13,	KTM 512
e01	*92/61*	0060	KTM (A)	A	6007	VBK	L3e	B und C	125/193/ 250/297	2T-EXC	125EXC;200EXC; 250EXC; 300EXC	KTM Sportmotorcycle AG, Harlochnerstraße 13, A-5230 Mattighofen	KTM
e01	*92/61*	0070	KTM	A	-	VBK	L3e	B und C	-	KTM 2T-EXC		KTM Sportmotorcycle AG, Harlochnerstraße 13, A-5230 Mattighofen	
e01	*92/61*	0067	KTM (A)	A	6007	VBK	L3e	C	398	4T-EXC	400EXC; 520EXC	KTM Sportmotorcycle AG, Harlochnerstraße 13, A-5230 Mattighofen	KTM
e12	*92/61*	0001	KTM (A)	A	6007	VBK	L3e	C	398/625	4T-SC	400/ 620 Super Competition	KTM Sportmotorcycle AG, Harlochnerstraße 13, A-5230 Mattighofen	KTM
e01	*92/61*	0007	KTM (A)	A	6007	VBK	L3e	C und D	398/609	KTM 4T-EGS	KTM 400LC4;KTM 620 LC4	KTM Sportmotorcycle AG, Harlochnerstraße 13, A-5230 Mattighofen	KTM
e01	*92/61*	0048	KTM (A)	A	6007	VBK	L3e	C und D	625	KTM DK II	Duke II	KTM Sportmotorcycle AG, Harlochnerstraße 13, A-5230 Mattighofen	KTM 584
e09	*92/61*	0082	ACE (A)	A	901	VAD	L7e	D	280	A	ARCTIC CAT (Vierradfz.)	ACE Trade AG, Lampersbach 28, A-5453 Werfenweng, Austria	Suzuki
e01	*92/61*	0046	REV (A)	A	6026	VA1	L1e	entfällt	EM 24Volt	RAVE	Elektro Mofa	REV Rechargeable Electric VehiclesGesmbH, A-9020 Klagenfurt	Siboni Italy
e01	*92/61*	0046	REV (A)	A	6026	VA1	L1e	entfällt	24Volt	Reflex	Elektro Mofa (0,16 KW)	REV Rechargeable Electric VehiclesGesmbH, A-9020 Klagenfurt	Siboni Italy
e13	*92/61*	0010	BOMBARDIER (CDN)	Canada	901	2BV	L6e	entfällt	EM	A1 (2S,VG,BM)	(Klein-PKW)	BOMBARDIER Inc., Recreational Products, NV Division,75 J.-A. Bombardier Street, Sherbrooke, Quebec, Canada J1L 1W3	Advanced DC Motors Inc.
e13	*92/61*	0050	BOMBARDIER (CDN)	Canada	901	2BV	L7e	entfällt	498	A	Leichtes 4-Rad-Fz.	BOMBARDIER Inc., Recreational Products, NV Division,75 J.-A. Bombardier Street, Sherbrooke, Quebec, Canada J1L 1W3	Bombardier-Rotax
e13	*92/61*	0057	BOMBARDIER (CDN)	Canada	901	2BV	L7e	entfällt	644	C	Quest 650 XT; Leichtes 4-Rad-Fz.	BOMBARDIER Inc., Recreational Products, NV Division,75 J.-A. Bombardier Street, Sherbrooke, Quebec, Canada J1L 1W3	Bombardier-Rotax 610
e13	*92/61*	0023	MONNIER	CH	901	TJ9	L3e	C	397	603T	MXR400 3T	Monnier Avenue de Préville 6, CH-1510 Moudon	Honda NE03E
e01	*92/61*	0118	GDF (CZ)	CZ	8034	TLG	L1e	A	Elektro	EB07	L1 - Elektromofa	GDF spol, s.r.o., CZ-788 01 Oskava	GDF KM06
e13	*92/61*	0055	GLOBAL GENERATION CULT	Deutschland	901	WGG	L1e	A	Elektro	MIM070	Elektro-Mofa	GLOBAL GENERATION CULT GmbH, Birkenstraße 169, D- 82024 Taufkirchen Germany	Zhongshen Da Yang Electric
e01	*2000/7*	0045	HELMIG	Deutschland	9845	WHG	L1e	A	Elektro	S200	S200	Hans Helmig GmbH, D-51491 Overath	Hunfa Electric Machine
e01	*92/61*	0145	Helmig GmbH	Deutschland		WHG	L1e	A	24volt	S 200		Hans Helmig GmbH, D-51491 Overath	Hunfha HM429M
e01	*92/61*	0100	MOT.-U.ZWEIRADW.-MUZ	Deutschland	7888	SNZ	L1e	A	24Volt	MZ ER	Charly	MuZ Motorrad- u. Zweiradwerk GmbH, D-09405 Zschopau-Hohndorf	Bosch
e01	*92/61*	0047	REV (A)	Deutschland		VA1	L1e	A	24Volt	Reflex		REV Rechargeable Electric VehiclesGesmbH, A-9020 Klagenfurt	Siboni 65/75 PF070
e01	-92/61-	0164	SACHS	Deutschland	6653	WSF	L1e	A	30	529	Saxonette Version A:25km/h; B: 20 km/h (0,5 kw)	Sachs Fahrzeug- und Motorentechnik GmbH, 90441 Nürnberg	Sachs 301A/AB
e01	-92/61-	0165	SACHS	Deutschland	6653	WSF	L1e	A	49,9	648	Prima/ Optima	Sachs Fahrzeug- und Motorentechnik GmbH, 90441 Nürnberg	Sachs 505
e01	-92/61-	0170	SACHS	Deutschland	6653	WSF	L1e	A	36Volt	912	OLIVER (Elektro)	Sachs Fahrzeug- und Motorentechnik GmbH, 90441 Nürnberg	Sachs
e01	*92/61*	0066	Bayer.mot.werke-bmw	Deutschland	5	WB1	L3e	B	125	C1	C1	BMW Motorrad, 80788 München	BMW 011EA
e01	*92/61*	0068	mot.-u.zweiradw.-muz	Deutschland	7888	SNZ	L3e	B	124	RT 125	Tour	MuZ Motorrad- u. Zweiradwerk GmbH, D-09405 Zschopau-Hohndorf	(MuZ) MZ-125
e01	*92/61*	0108	MZ	Deutschland	9840	SNZ	L3e	B	124	MZ 125	MZ 125 SX(Enduro)/SM(Strasse)	MZ Motorrad und Zweiradwerk GmbH, Alte Marienberger Str. 30-35, 09405 Zschopau-Hohndorf	MZ 125

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e01	*92/61*	0003	SACHS	Deutschland	6653	WSF	L3e	B	124,8	675	XTC; XTC-N	Sachs Fahrzeug- und Motorentechnik GmbH, 90441 Nürnberg	Minarelli (I)
e01	-92/61-	0163	SACHS	Deutschland	6653	WSF	L3e	B	124,5	677	XTC	Sachs Fahrzeug- und Motorentechnik GmbH, 90441 Nürnberg	Suzuki J (FX-125)
e01	*92/61*	0001	Sachs GmbH	Deutschland		WSF	L3e	B	124	80, roadster 125 V2	Sachs	Sachs Fahrzeug- und Motorentechnik GmbH, 90441 Nürnberg	Yamaha XV125
e01	*92/61*	0119	SIMSON MOTORRAD	Deutschland	9811	WSZ	L3e	B	124,01	MS 125 A	SIMSON 125 ,-S, -RS	Simson Motorrad GmbH, D-98529 Suhl	Morini
e01	*92/61*	0061	Bayer.mot.werke-bmw	Deutschland	5	WB1	L3e	C und D	652	R13	F 650 GS	BMW Motorrad, 80788 München	BMW 651EA
e01	*92/61*	0093	Bayer.mot.werke-bmw	Deutschland	5	WB1	L3e	C und D	848/1170	R2C	R 1200 C;R 850 C	BMW Motorrad, 80788 München	BMW
e01	*92/61*	0130	Bayer.mot.werke-bmw	Deutschland	5	WB1	L3e	C und D	652	K 14	F650 CS	BMW Motorrad, 80788 München	BMW
e01	-92/61-	0151	MZ	Deutschland	9840	SNZ	L3e	C und D	660	MuZ 660 E	Baghira; MASTIFF	MZ Motorrad und Zweiradwerk GmbH, Alte Marienberger Str. 30-35, 09405 Zschopau-Hohndorf	Yamaha 4NN / MUZ 660-Yamaha
e01	*92/61*	0064	sachs	Deutschland	6653	WSF	L3e	C und D	644	830	Roadster 650 V 1.6	Sachs Fahrzeug- und Motorentechnik GmbH, 90441 Nürnberg	Suzuki J (XF650)
e01	*92/61*	0098	SACHS	Deutschland	6653	WSF	L3e	C und D	805	835	Roadster 800 V2	Sachs Fahrzeug- und Motorentechnik GmbH, 90441 Nürnberg	Suzuki VS800GL
e01	*92/61*	0019	Bayer.mot.werke-bmw	Deutschland	5	WB1	L3e	D	1171	K2 LT	K 1200 LT	BMW Motorrad, 80788 München	BMW 124BE
e01	*92/61*	0041	Bayer.mot.werke-bmw	Deutschland	5	WB1	L3e	D	1130	R21	R 1150 GS	BMW Motorrad, 80788 München	BMW 122BE
e01	*92/61*	0101	Bayer.mot.werke-bmw	Deutschland	5	WB1	L3e	D	848/1130	R22	R 850 RT, R 1150 RT	BMW Motorrad, 80788 München	BMW
e01	*92/61*	0102	Bayer.mot.werke-bmw	Deutschland	5	WB1	L3e	D	1085	R2S	R 1100 S	BMW Motorrad, 80788 München	BMW
e01	*92/61*	0104	Bayer.mot.werke-bmw	Deutschland	5	WB1	L3e	D	1171	K12	K 1200 RS	BMW Motorrad, 80788 München	BMW
e01	-92/61-	0152	Bayer.mot.werke-bmw	Deutschland	5	WB1	L3e	D	1170	K30	R 1200 CL	BMW Motorrad, 80788 München	BMW
e04	*92/61*	0164	BOOM Trikes (D)	Deutschland	901	WBC	L5e	D	>1000	BMF		BOOM TRIKES Fahrzeugbau GmbH; Bächinger Straße 7, 89567 Sontheim-Brenz	Peugot TU3JP / EW10
e01	*92/61*	0149	SIMSON	Deutschland	9811	WSZ	L2e	entfällt	49,4	SDA 50	KKRAD; 3-raedrig	Simson Zweirad GmbH, D-98501 Suhl	Morini
e01	*92/61*	0089	SIMSON ZWEIRAD	Deutschland	8747	WSZ	L2e	entfällt	49,9	SD 50	dreirädriges Kleinkraftrad	Simson Zweirad GmbH, D-98501 Suhl	Simson
e04	*92/61*	0008	Boom Trikes (D)	Deutschland	901	WBC	L5e	entfällt	1485	BMS/ BML	Highway; Chopper; Low Rider; Family	BOOM TRIKES Fahrzeugbau GmbH; Bächinger Straße 7, 89567 Sontheim-Brenz	VW de Mexico 1600i
e13	*92/61*	0032	EASY TRIKE	Deutschland	7945	W09	L5e	entfällt	1584	E1	C1/45: Chopper	EASY TRIKE Spezialfahrzeug GmbH, Am Bahnhof, 89192 Rammingen	Volkswagen
e13	*92/61*	0032	EASY TRIKE	Deutschland	7945	W09	L5e	entfällt	1285	E1	H2/44: Highway 2000	EASY TRIKE Spezialfahrzeug GmbH, Am Bahnhof, 89192 Rammingen	Volkswagen
e13	*92/61*	0032	EASY TRIKE	Deutschland	7945	W09	L5e	entfällt	1584	E1	HF/50: Highway-Family	EASY TRIKE Spezialfahrzeug GmbH, Am Bahnhof, 89192 Rammingen	Volkswagen
e13	*92/61*	0032	EASY TRIKE	Deutschland	7945	W09	L5e	entfällt	1584	E1	CF/50: Chopper-Family	EASY TRIKE Spezialfahrzeug GmbH, Am Bahnhof, 89192 Rammingen	Volkswagen
e04	*92/61*	0031	KBM Trikes	Deutschland	8726	W09	L5e	entfällt	1584	T1	Trike (37,7 kw) (545-595 kg mit Fahrer)	K.B.M Trikes, Auguststr. 10, D-66538 Neunkirchen	KBM/Vege Type: D.A.S.
e01	*92/61*	0032	rewaco	Deutschland	8701	W09	L5e	entfällt	1800	HS4	Trike	rewaco, Schlosserstr. 24, D-51789 Lindlar	VW 1,8
e01	*92/61*	0131	TRIKETEC	Deutschland	9843	W09	L5e	entfällt	599/799	TRC	Trike 2B / 2D (Benzin/Diesel)	Triketec GmbH, D- 79427 Eschbach	Daimler Chrysler, Stuttgart
e01	*92/61*	0097	PROMEC	Deutschland	9800	W09	L6e	entfällt	1KW	GB1	Green Bee (Elektro, 3-Rad)	Promec Systems GmbH & Co, KG, D-98527 Suhl	Atech GmbH, D-84489 Burghausen
e01	*92/61*	0143	CAPS (DK)	DK	9589	UH9	L3e	D	134	ProCap (BTL)		CAPS A/S, DK-8240 Risskov	Harley -Davidson BTL
e09	*92/61*	0034	HRD (F)	Frankreich	8742	VMX	L1e	A	49	50E	Motori Minarelli	HRD Industrie, F- 81160 Saint-Juery	Minarelli
e13	*92/61*	0031	IVE (F)	Frankreich	901	-	L1e	A	Elektro	TR	Elektro-Moped Troter	I.V.E. Vehicules Electriques, ZAC de Valentin, F-25045 Besancon	Siboni T2C
e13	*92/61*	0008	JC Andruet (F)	Frankreich	901	VN3	L1e	A	-	JC	JCA2R1 (E-Roller) 25 km/h	Jean Claude Andruet, F-83700 Saint Ràphael	Andruet MP 8165
e13	*92/61*	0028	MANITOU (F)	Frankreich	901	VF9	L1e	A	electric	AA	Mandi 20 Elektro (ALEL)	Manitou, B.P. 249-430, rue de l´ Aubinière, F-44158 Acensis Cedex	Siboni srl Perm T2C HT3200

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e13	*92/61*	0017	MBK (F)	Frankreich	3029	VG5	L1e	A	49,2	SA09	MBK (SA092), Yamaha (SA091)	MBK Industrie, ZI de Rouvroy, F-02100 Saint Quentin	Minarelli
e13	*92/61*	0024	MBK (F)	Frankreich	3029	VG5	L1e	A	49,2	SA06	MBK (SA062), Yamaha (SA061)	MBK Industrie, ZI de Rouvroy, F-02100 Saint Quentin	Minarelli
e13	*92/61*	0029	MBK (F)	Frankreich	3029	VG5	L1e	A	49	SA05	MBK (SA052), Yamaha (SA051)	MBK Industrie, ZI de Rouvroy, F-02100 Saint Quentin	Minarelli
e13	*92/61*	0036	MBK (F)	Frankreich	3029	VG5	L1e	A	49,2	SA14	MBK (SA142), Yamaha (SA141)	MBK Industrie, ZI de Rouvroy, F-02100 Saint Quentin	Minarelli
e13	*92/61*	0037	MBK (F)	Frankreich	3029	VG5	L1e	A	49,2	SA03	MBK (SA03D), Yamaha (SA03B)	MBK Industrie, ZI de Rouvroy, F-02100 Saint Quentin	Minarelli
e01	*92/61*	0157	PEUGEOT MOTOCYCL. (F)	Frankreich	3118	VGA	L1e	A	49,13	T1		Peugeot Motocycles, Mandeure, F-25706 Valentigney cedex	Peugeot
e02	*92/61*	0026	peugeot motocycl. (f)	Frankreich		VGA	L1e	A	49,13	C1		Peugeot Motocycles, Mandeure, F-25706 Valentigney cedex	Peugeot TK51
e02	*92/61*	0004	peugeot motocycl. (f)	Frankreich	3118	VGA	L1e	A	-	E1A	Elektro	Peugeot Motocycles, Mandeure, F-25706 Valentigney cedex	Peugeot / Schabmuller EA1
e02	*92/61*	0006	peugeot motocycl. (f)	Frankreich	3118	VGA	L1e	A	49,13	S1B		Peugeot Motocycles, Mandeure, F-25706 Valentigney cedex	Peugeot
e02	*92/61*	0007	peugeot motocycl. (f)	Frankreich	3118	VGA	L1e	A	49,13	G1A		Peugeot Motocycles, Mandeure, F-25706 Valentigney cedex	Peugeot
e02	*92/61*	0008	peugeot motocycl. (f)	Frankreich	3118	VGA	L1e	A	49,13	S1A		Peugeot Motocycles, Mandeure, F-25706 Valentigney cedex	Peugeot
e02	*92/61*	0009	peugeot motocycl. (f)	Frankreich	3118	VGA	L1e	A	49,13	S1C		Peugeot Motocycles, Mandeure, F-25706 Valentigney cedex	Peugeot
e02	*92/61*	0014	peugeot motocycl. (f)	Frankreich	3118	VGA	L1e	A	49,13	B1		Peugeot Motocycles, Mandeure, F-25706 Valentigney cedex	Peugeot FC1
e02	*92/61*	0027	PEUGEOT MOTOCYCL. (F)	Frankreich	3118	VGA	L1e	A	49,13	S1	TREK; FIGHT; VIVACITY	Peugeot Motocycles, Mandeure, F-25706 Valentigney cedex	Peugeot
e09	*92/61*	0037	peugeot motocycl. (f)	Frankreich	3118	VGA	L1e	A	49,7	DR 01	XR6	Peugeot Motocycles, Mandeure, F-25706 Valentigney cedex	Minarelli
e09	*92/61*	0111	PEUGEOT MOTOCYCL. (F)	Frankreich	3118	VGA	L1e	A	49,7	DV0C	XP6-02	Peugeot Motocycles, Mandeure, F-25706 Valentigney cedex	Minarelli
e09	*92/61*	0112	PEUGEOT MOTOCYCL. (F)	Frankreich	3118	VGA	L1e	A	49,7	FU0C	XP6-01	Peugeot Motocycles, Mandeure, F-25706 Valentigney cedex	Minarelli
e09	*92/61*	0015	HRD (F)	Frankreich	8742	VMX	L3e	B	124	1C	HRD 125	HRD Industrie, F- 81160 Saint-Juery	Morino Franco FM125
e13	*92/61*	0016	MBK (F)	Frankreich	3029	VG5	L3e	B	101	SB05	MBK (SB052), Yamaha (SB051)	MBK Industrie, ZI de Rouvroy, F-02100 Saint Quentin	Yamaha/Motori Minarelli
e13	*92/61*	0030	MBK (F)	Frankreich	3029	VG5	L3e	B	124	SE04	MBK (SE042), Yamaha (SE041)	MBK Industrie, ZI de Rouvroy, F-02100 Saint Quentin	Minarelli
e13	*92/61*	0039	MBK (F)	Frankreich	3029	VG5	L3e	B	124	SE05	MBK (SE052), Yamaha (SE051)	MBK Industrie, ZI de Rouvroy, F-02100 Saint Quentin	Minarelli E312E
e02	*92/61*	0005	peugeot motocycl. (f)	Frankreich	3118	VGA	L3e	B	99,94 / 124,8	G2A		Peugeot Motocycles, Mandeure, F-25706 Valentigney cedex	Peugeot FB6 / FD1
e02	*92/61*	0010	peugeot motocycl. (f)	Frankreich	3118	VGA	L3e	B	99,94	S2A		Peugeot Motocycles, Mandeure, F-25706 Valentigney cedex	Peugeot
e02	*92/61*	0015	peugeot motocycl. (f)	Frankreich	3118	VGA	L3e	B	99,94	B2		Peugeot Motocycles, Mandeure, F-25706 Valentigney cedex	Peugeot FC2
e01	-92/61-	0155	PEUGEOT MOTOCYCL. (F)	Frankreich	3118	VGA	L3e	B und C	125 / 151	H2		Peugeot Motocycles, Mandeure, F-25706 Valentigney cedex	Peugeot
e01	-92/61-	0156	PEUGEOT MOTOCYCL. (F)	Frankreich	3118	VGA	L3e	B und C	124 / 150	P2		Peugeot Motocycles, Mandeure, F-25706 Valentigney cedex	Piaggio

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e13	*2002/24*	0001	MBK (F)	Frankreich		VG5	L3e	C	264	SH 01	Yamaha/MBK	MBK Industrie, ZI de Rouvroy, F-02100 Saint Quentin	Minarelli H314E
e13	*92/61*	0038	MBK (F)	Frankreich	3029	VG5	L3e	C	152	SG06	MBK (SG062), Yamaha (SG061)	MBK Industrie, ZI de Rouvroy, F-02100 Saint Quentin	Minarelli G319E
e13	*92/61*	0041	MBK (F)	Frankreich	3029	VG5	L3e	C	152	SG07	MBK (SG072), Yamaha (SG071)	MBK Industrie, ZI de Rouvroy, F-02100 Saint Quentin	Minarelli
e02	*92/61*	0016	VOXAN (F)	Frankreich	901	VN4	L3e	D	996	V2	01:Roadster; 02:Cafe Racer	VOXAN, Allee Saint Simon - B.P. 7719, F-95046 Cergy-Pontoise Cedex (France)	VOXAN, 17, avenue Jean Jaures B.P. 82, F-63503 Issoire Cedex
e02	*92/61*	0003	Autoland (f)	Frankreich	901	VNA	L7e	D	505	A51	Auverland (Klein-PKW)	Autoland SA, BP 12, F-42260, St. Germain Laval	Lombardini LDW 502/M3
e13	*92/61*	0011	alel (F)	Frankreich	901	VF9	L1e	entfällt	EM	S4	24B; 30B; 30E; 36E	ALEL, Rue de Verger Bringuey, F-70200 Clairegoutte	Perm Motor PM 132
e13	*92/61*	0012	SECMA (F)	Frankreich	901	-	L2e	entfällt	49	CS BUG1	(Dreirad-Klein-PKW) 229 kg mit Fahrer, Otto 2,43 kw	SECMA S.A. , Rue Denfert Rochereau, F-59580 Aniche	Motori Franco Morini Italy (AH50L)
e13	*92/61*	0013	SECMA (F)	Frankreich	901	-	L5e	entfällt	338	QS BUG3	(Dreirad-Klein-PKW) , (7,7 kw, 285 kg mit Fahrer)	SECMA S.A. , Rue Denfert Rochereau, F-59580 Aniche	Lombardini (LGA 340)
e01	*92/61*	0136	STARTRIKE (F)	Frankreich	3141	VF9	L5e	entfällt	1390	K4J713	Trike (72kw / 636 kg)	startrike S.A.,technoparc de 24 heures, F-72100 Le Mans	Renault
e13	*92/61*	0004	Bellier (f)	Frankreich	901	VF9	L6e	entfällt	505	XLD	502 (Klein-PKW) (4kw)	Ste. Bellier, ZI du Patis, BP 53, F-85440 Talmont Saint Hilaire	Lombardini LDW 502/M4
e13	*92/61*	0015	Bellier (f)	Frankreich	901	VF9	L6e	entfällt	523	BLC **BLX**	501 (Klein-LKW)	Ste. Bellier, ZI du Patis, BP 53, F-85440 Talmont Saint Hilaire	Yanmar 2TNE68DM
e13	*92/61*	0042	Bellier (f)	Frankreich	901	VF9	L6e	entfällt	EM	BLE	(Klein-LKW)	Ste. Bellier, ZI du Patis, BP 53, F-85440 Talmont Saint Hilaire	GE Motors (General Electric), Coventry,GB (BC49JB1108)
e13	*92/61*	0048	Bellier (f)	Frankreich	901	VF9	L6e	entfällt	505/523	DVB	502/ 503 (Klein-LKW)	Ste. Bellier, ZI du Patis, BP 53, F-85440 Talmont Saint Hilaire	Lombardini LDW502/M4 und Yanmar 2TNE68DM
e09	*92/61*	0005	chatenet (f)	Frankreich	901	VMS	L6e	entfällt	505	CJF	Stella (Klein-PKW) (350kg o.Fahrer / Diesel) 4kw	Ste. de Construction d´Automobiles Chatenet et Cie., BP 9,F- 87260 Pierre Buffiere	Lombardini LDW 502
e09	*92/61*	0031	chatenet (f)	Frankreich	901	VMS	L6e	entfällt	505	CH16	(Klein-PKW)	Ste. de Construction d´Automobiles Chatenet et Cie., BP 9,F- 87260 Pierre Buffiere	Lombardini LDW 502
e09	*92/61*	0009	EVASAO EUROPE (F)	Frankreich	901	VG3	L6e	entfällt	505	3MD	(Klein-PKW) 4 KW	Evasao	Lombardini LDW502
e13	*92/61*	0001	jeanneau newco (f)	Frankreich	901		L6e	entfällt	505 / 523	40 (L0/Y0)	Microcar (Klein-PKW) 45 km/h	Jeanneau Newco, BP 529, F-85500 Les Herbiers	Lombardini Italy / Yammar Diesel Japan
e09	*92/61*	0003	jeanneau newco (f)	Frankreich	901		L6e	entfällt	315	VA	Microcar (Klein-PKW) (4KW) 360 kg mit Fahrer (Fuel: gasoleo A)	Jeanneau Newco, BP 529, F-85500 Les Herbiers	Lombardini 15LD315/M1
e09	*92/61*	0007	jeanneau newco (f)	Frankreich	901		L6e	entfällt	505 / 315	LY	Microcar (Klein-PKW) (4KW) (Gasoleo A) (455 kg mit Fahrer)	Jeanneau Newco, BP 529, F-85500 Les Herbiers	Lombardini 15LD315/M1
e13	*92/61*	0002	Ligier (F)	Frankreich	901	VJR	L6e	entfällt	505	JS 16	Ligier (Klein-PKW), (diesel, 4kw)	Automobiles Ligier, F-03200 Abrest	Lombardini
e09	*92/61*	0010	SAVEL (F)	Frankreich		VHJ	L6e	entfällt	505	CE 7	ERAD (4kw) (Fuel: Gasoleo A)		Lombardini LDW502/M3
e09	*92/61*	0009	savel (f)	Frankreich	901	VHJ	L6e	entfällt	505	CE7	ERAD (Klein-PKW)		Lombardini LDW502/M3
e13	*92/61*	0027	SECMA (F)	Frankreich	901	-	L6e	entfällt	EM 36 Volt	CS ELEC	(Dreirad-Klein-PKW) (Vierrad-Moped / Elektro) (284 kg mit Fahrer) 1,5 kw	SECMA S.A. , Rue Denfert Rochereau, F-59580 Aniche	Imperial Electric, USA
e02	*92/61*	0028	Société BI-SCOT (F)	Frankreich	901	VNS	L6e	entfällt	EM	P01	leichtes Vierradfahrzeug	Société BI-SCOT (F), Technoparc du circuit de 24 heures, F-72100 Le Mans	GE Motors (General Electric), Coventry,GB (BC49JB1108)
e02	*92/61*	0001	aixam (f)	Frankreich	901	VLG	L7e	entfällt	479 (D)	C1	AIXAM 500 (5VB0/ Klein-PKW)	AIXAM-Mega, 56 route de Pugny, B.P. 112, 73101 Aix-Les- Bains Cedex	Kubota Z482

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e02	*92/61*	0002	aixam (f)	Frankreich	901	VLG	L7e	entfällt	276/400	C0	AIXAM 3VB0/4VB0 (Klein-PKW)	AIXAM-Mega, 56 route de Pugny, B.P. 112, 73101 Aix-Les- Bains Cedex	Kubota
e02	*92/61*	0011	aixam (f)	Frankreich	901	VLG	L7e	entfällt	505	C4	AIXAM 5VBA/9VBA (Klein-PKW)	AIXAM-Mega, 56 route de Pugny, B.P. 112, 73101 Aix-Les- Bains Cedex	Lombardini
e02	*92/61*	0012	aixam (f)	Frankreich	901	VLG	L7e	entfällt	505	C5	AIXAM 5VBA/9VBA (Klein-PKW)	AIXAM-Mega, 56 route de Pugny, B.P. 112, 73101 Aix-Les- Bains Cedex	Lombardini
e02	*92/61*	0013	aixam (f)	Frankreich	901	VLG	L7e	entfällt	276/400	C3	AIXAM 3VBA/4VBA (Klein-PKW)	AIXAM-Mega, 56 route de Pugny, B.P. 112, 73101 Aix-Les- Bains Cedex	Kubota
e02	*92/61*	0017	aixam (f)	Frankreich	901	VLG	L7e	entfällt	400	E3	leichtes Vierradfahrzeug	AIXAM-Mega, 56 route de Pugny, B.P. 112, 73101 Aix-Les- Bains Cedex	Kubota Z402
e02	*92/61*	0018	aixam (f)	Frankreich	901	VLG	L7e	entfällt	479	F4	Vierradfahrzeug (eingest.3-Rad-Fz.)	AIXAM-Mega, 56 route de Pugny, B.P. 112, 73101 Aix-Les- Bains Cedex	Kubota Z482
e02	*92/61*	0019	aixam (f)	Frankreich	901	VLG	L7e	entfällt	400	E4	leichtes Vierradfahrzeug	AIXAM-Mega, 56 route de Pugny, B.P. 112, 73101 Aix-Les- Bains Cedex	Kubota
e02	*92/61*	0020	aixam (f)	Frankreich	901	VLG	L7e	entfällt	400	E2	leichtes Vierradfahrzeug	AIXAM-Mega, 56 route de Pugny, B.P. 112, 73101 Aix-Les- Bains Cedex	Kubota Japan
e02	*92/61*	0021	aixam (f)	Frankreich	901	VLG	L7e	entfällt	400	E6	leichtes Vierradfahrzeug	AIXAM-Mega, 56 route de Pugny, B.P. 112, 73101 Aix-Les- Bains Cedex	Kubota Z402
e02	*92/61*	0022	aixam (f)	Frankreich	901	VLG	L7e	entfällt	479 (D)	F2	leichtes Vierradfahrzeug	AIXAM-Mega, 56 route de Pugny, B.P. 112, 73101 Aix-Les- Bains Cedex	Kubota Japan
e02	*92/61*	0023	aixam (f)	Frankreich	901	VLG	L7e	entfällt	479 (D)	G2	leichtes Vierradfahrzeug	AIXAM-Mega, 56 route de Pugny, B.P. 112, 73101 Aix-Les- Bains Cedex	Kubota Japan
e02	*92/61*	0024	aixam (f)	Frankreich	901	VLG	L7e	entfällt	479 (D)	G4	leichtes Vierradfahrzeug	AIXAM-Mega, 56 route de Pugny, B.P. 112, 73101 Aix-Les- Bains Cedex	Kubota Japan
e02	*92/61*	0025	aixam (f)	Frankreich	901	VLG	L7e	entfällt	479 (D)	G6	leichtes Vierradfahrzeug	AIXAM-Mega, 56 route de Pugny, B.P. 112, 73101 Aix-Les- Bains Cedex	Kubota Japan
e09	*92/61*	0001	aixam (f)	Frankreich	901	VLG	L7e	entfällt	400	C34VB*	AIXAM 400 (Klein-PKW)	AIXAM-Mega, 56 route de Pugny, B.P. 112, 73101 Aix-Les- Bains Cedex	Kubota Japan
e09	*92/61*	0006	aixam (f)	Frankreich	901	VLG	L7e	entfällt	479 (D)	C	AIXAM 500 (Klein-PKW)	AIXAM-Mega, 56 route de Pugny, B.P. 112, 73101 Aix-Les- Bains Cedex	Kubota Japan
e13	*92/61*	0007	Ligier (F)	Frankreich	901	VJR	L7e	entfällt	505	JS 16 FE	Ligier (Klein-PKW), 15 kw, essence, (445/520 kg)	Automobiles Ligier, F-03200 Abrest	Lombardini
e13	*92/61*	0046	Ligier (F)	Frankreich	901	VJR	L7e	entfällt	505	JS 20FE	Ligier (leichtes 4-Radfahrzeug), (420/495 kg), 15 KW, essence	Automobiles Ligier, F-03200 Abrest	Lombardini
e13	*92/61*	0047	Ligier (F)	Frankreich	901	VJR	L7e	entfällt	505 / 49	JS 20ME	Ligier (leichtes 4-Radfahrzeug), 375/450 kg, fuel: essence	Automobiles Ligier, F-03200 Abrest	Lombardini
e13	*92/61*	0049	Ligier (F)	Frankreich	901	VJR	L7e	entfällt	505	JS 22 FE	Ligier (Klein-PKW), 13,6 kw (360/435 kg)	Automobiles Ligier, F-03200 Abrest	Lombardini
e13	*92/61*	0009	Ligier (F)	Frankreich	901	VJR	L7e	entfällt	315	JS 16 LD	Ligier (Klein-PKW), (380/455 kg) , 4kw, diesel	Automobiles Ligier, F-03200 Abrest	Lombardini 15LD315
e13	*92/61*	0033	Ligier (F)	Frankreich	901	VJR	L7e	entfällt	505	JS 20	Ligier (leichtes 4-Radfahrzeug), 4 kw, 390 kg, diesel	Automobiles Ligier, F-03200 Abrest	Lombardini
e13	*92/61*	0026	MICROCAR (F)	Frankreich	901	VH8	L7e	entfällt	505	49	(Klein-PKW) (Diesel)	Microcar, B.P. 529, F-85505 Les Herbiers Cedex	Lombardini LDW 502
e02	*92/61*	0029	NOGARO TECHNOLOGIE (F)	Frankreich	901	-	L7e	entfällt		TMP	FIOR (Leicht-LKW)	Nogaro Technologie, Route d`Auch, BP 26, 32116 Nogaro (France)	Leroy-Somer
e13	*92/61*	0058	SECMA (F)	Frankreich	901	-	L7e	entfällt	505	FUN	FUN 500 (Vierrad) (15KW, Otto)) (469 kg mit Fahrer)	SECMA S.A. , Rue Denfert Rochereau, F-59580 Aniche	Lombardini (LGW 523 MPI/S)
e09	*92/61*	0103	SIMPA (F)	Frankreich	901	VGP	L7e	entfällt	523	8	Leichtes Vierradfz. (JDM) (450 kg mit Fahrer)	S.A. SIMPA, 2. rue Paul Langevin, F-49241 Avrille Cedex	Yanmar

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e13	*92/61*	0003	simpa (f)	Frankreich	901	VGP	L7e	entfällt	505 / 523	97	SIMPA o. JDM (Klein-PKW) 4kw	S.A. SIMPA, 2. rue Paul Langevin, F-49241 Avrille Cedex	Lombardini und Yanmar
e03	*92/61*	0107	SEAC (BG)	GB	901	ZHC	L1e	A	EM 24Volt	ELEFUN+	Elektro-Moped 0,2KW	SEAC srl, Via Zanica, Grassobbio (GB)	SEAC
e11	*92/61*	0021	triumph (gb)	GB	2014	SMT	L3e	C und D	600	806ADS41I...	TT600	Triumph Motorcycles Limited, Jacknell Road, Dodwells Bridge Industrial Estate, hinckley,Leicestershire LE10 3BS	Triumph 600 STD
e11	*92/61*	0030	triumph (gb)	GB	2014	SMT	L3e	C und D	790	908MDS2CW..	908MD	Triumph Motorcycles Limited, Jacknell Road, Dodwells Bridge Industrial Estate, hinckley,Leicestershire LE10 3BS	Triumph 800 STD
e11	*92/61*	0075	triumph (gb)	GB		SMT	L3e	C und D	790	(908?) 808MLD2CM94 MM51		Triumph Motorcycles Limited, Jacknell Road, Dodwells Bridge Industrial Estate, hinckley,Leicestershire LE10 3BS	Triumph 800270
e11	*92/61*	0042	TRIUMPH (GB)	GB	2014	SMT	L3e	C und D	790	908MKD2CW..	Bonneville America	Triumph Motorcycles Limited, Jacknell Road, Dodwells Bridge Industrial Estate, hinckley,Leicestershire LE10 3BS	Triumph 800 270
e09	*92/61*	0051	CCM (GB)	GB	901	SMZ	L3e	D	599	HA	604E ***/ 604R ***	CCM Motorcycles Ltd., Lions drive, Shadsworth Business Park, Blackburn, BB1 2QB, England	Bombardier-Rotax 604
e09	*92/61*	0084	CCM (GB)	GB	901	SMZ	L3e	D	644	HB	644 RT/ 644 Dual Sport	CCM Motorcycles Ltd., Lions drive, Shadsworth Business Park, Blackburn, BB1 2QB, England	Suzuki XF650
e11	*92/61*	0054	TRIUMPH (GB)	GB	2014	SMT	L3e	D	-	806LBS4IWVY JJ61	Speed Four	Triumph Motorcycles Limited, Jacknell Road, Dodwells Bridge Industrial Estate, hinckley,Leicestershire LE10 3BS	
e11	*92/61*	0004	triumph (gb)	GB	2014	SMT	L3e	D	955	595SPP3I	595 SP	Triumph Motorcycles Limited, Jacknell Road, Dodwells Bridge Industrial Estate, hinckley,Leicestershire LE10 3BS	Triumph 955 HPD1
e11	*92/61*	0005	triumph (gb)	GB	2014	SMT	L3e	D	955	595RPPT3I	595 RP	Triumph Motorcycles Limited, Jacknell Road, Dodwells Bridge Industrial Estate, hinckley,Leicestershire LE10 3BS	Triumph 955 HTD
e11	*92/61*	0006	triumph (gb)	GB	2014	SMT	L3e	D	955	695ABT3I	695 AB	Triumph Motorcycles Limited, Jacknell Road, Dodwells Bridge Industrial Estate, hinckley,Leicestershire LE10 3BS	Triumph 955 HTD
e11	*92/61*	0007	triumph (gb)	GB	2014	SMT	L3e	D	885	709ENT3I	709 EN	Triumph Motorcycles Limited, Jacknell Road, Dodwells Bridge Industrial Estate, hinckley,Leicestershire LE10 3BS	Triumph 900 HTD
e11	*92/61*	0008	triumph (gb)	GB	2014	SMT	L3e	D	885	309RTH3C	309 RT	Triumph Motorcycles Limited, Jacknell Road, Dodwells Bridge Industrial Estate, hinckley,Leicestershire LE10 3BS	Triumph 885 HTR
e11	*92/61*	0009	triumph (gb)	GB	2014	SMT	L3e	D	885	309SNH3C	309 SN	Triumph Motorcycles Limited, Jacknell Road, Dodwells Bridge Industrial Estate, hinckley,Leicestershire LE10 3BS	Triumph 885 HTR
e11	*92/61*	0010	triumph (gb)	GB	2014	SMT	L3e	D	885	309RDG3C	309 RD	Triumph Motorcycles Limited, Jacknell Road, Dodwells Bridge Industrial Estate, hinckley,Leicestershire LE10 3BS	Triumph 885 HT2
e11	*92/61*	0011	triumph (gb)	GB	2014	SMT	L3e	D	885	309RLH3C	309 RL	Triumph Motorcycles Limited, Jacknell Road, Dodwells Bridge Industrial Estate, hinckley,Leicestershire LE10 3BS	Triumph 885 HTR
e11	*92/61*	0014	triumph (gb)	GB	2014	SMT	L3e	D	955	695ACT3I?	PHG?6?; Sprint RS; 695ACT3I*	Triumph Motorcycles Limited, Jacknell Road, Dodwells Bridge Industrial Estate, hinckley,Leicestershire LE10 3BS	Triumph 955 HTD

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e11	*92/61*	0040	TRIUMPH (GB)	GB	2014	SMT	L3e	D	955	595NSB3IW..	Daytona 955i	Triumph Motorcycles Limited, Jacknell Road, Dodwells Bridge Industrial Estate, hinckley,Leicestershire LE10 3BS	Triumph 955 HPD1
e11	*92/61*	0041	TRIUMPH (GB)	GB	2014	SMT	L3e	D	955	595NPC3IW.	Speed Triple	Triumph Motorcycles Limited, Jacknell Road, Dodwells Bridge Industrial Estate, hinckley,Leicestershire LE10 3BS	Triumph 955 HPD1
e01	*92/61*	0124	GORGOLIS (GR)	GR	8152	XG8	L1e	A	49,5	DY50A	Dayang , Daytona	Gorgolis S.A., GR-42100 Trikala	Luoyang Northern EK Chor Motorcycles Ltd.(Dayang or Daytona Motors) DY139FM
e01	*92/61*	0175	GORGOLIS (GR)	GR		XG8	L3e	B	111/120/124	MD	Dayang, Daytona Motors	Gorgolis S.A., GR-42100 Trikala	Modenas MD
e01	*92/61*	0121	GORGOLIS (GR)	GR	8152	XG8	L3e	B	111	AN110H	Modenas KRISS II	Gorgolis S.A., GR-42100 Trikala	Modenas
e01	*92/61*	0123	GORGOLIS (GR)	GR	8152	XG8	L3e	B	97, 109, 120	DY100A	Dayang (100,110,125)	Gorgolis S.A., GR-42100 Trikala	Dayang
e01	*2000/7*	0122	GORGOLIS (GR)	GR	8152	XG8	-		-	BN175A	Modenas	Gorgolis S.A., GR-42100 Trikala	Modenas
e04	*92/61*	0067	WOLF TRIKES	HUN	901	TRW	L5e	entfällt	1584	HK	Traveller/ Tristar (Trike) (600-680 kg m. F.) (36,2 - 39,2 kW)	Wolftrikes kft, Bolyi ut 4, H-7753 Szajk Hungary	VW Mexico 1600i/ACD
e01	*92/61*	0018	BAJAJ (IND)	Indien	8355	MD2	L1e	A	49	29	Spirit Automatic; Esprit Automatic	Bajaj Auto Ltd. ,Akurdi, Pune-411 035, India	Bajaj Auto Ltd., India
e11	*92/61*	0029	MAJESTIC AUTO (IND)	Indien	901	-	L1e	A	49	Hero Winner		MAJESTIC AUTO Ltd. (INDIA)	Hero Briggs & Stratton, India
e11	*92/61*	0035	MAJESTIC AUTO (IND)	Indien	901	-	L1e	A	49	Hero Puch Aut.	Hero Puch Automatik	MAJESTIC AUTO Ltd. (INDIA)	Hero Briggs & Stratton, India
e11	*92/61*	0045	LML (IND)	Indien	901	MD7	L3e	B	125	STAR DELUXE 125	STAR DELUXE 125 CC	LML-Vespa Limited, C-10, Panki Industrial, Estate side-II, IND-208022 Kampur	LML
e01	*92/61*	0011	BAJAJ (IND)	Indien	8355	MD2	L3e	B und C	125/150	35	Classic SL	Bajaj Auto Ltd. ,Akurdi, Pune-411 035, India	Bajaj Auto Ltd., India
e11	*92/61*	0013	ENFIELD (IND)	Indien	8353	6B5	L3e	C	350, 500	Bullet	350; 500	Royal Enfield Motor Unit of Eicher Ltd., P.B. No. 5284,Tiruvottiyur High Road, Tiruvottiyur Chennai-600 019	Royal Enfield Motor Unit of Eicher Ltd.
e11	*92/61*	0026	LML (IND)	Indien	901	MD7	L3e	C	150	STAR DELUXE	STAR DELUXE	LML-Vespa Limited, C-10, Panki Industrial, Estate side-II, IND-208022 Kampur	LML
eIRL	*92/61*	0001	AD.EL. (I)	Italien	901	ZA9	L1e	A	EM	6 punto 8		AD.EL. Group srl, I-35020 Albignasego (PD)	Siboni
e03	*92/61*	0012	APRILIA (I)	Italien	4123	ZD4	L1e	A	49,38	RL		Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Aprilia engines
e03	*92/61*	0085	APRILIA (I)	Italien	4123	ZD4	L1e	A	49	SC		Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Aprilia A02/A04
e11	*92/61*	0044	APRILIA (I)	Italien	4123	ZD4	L1e	A	50	ST	RX 50	Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Aprilia
e11	*92/61*	0048	APRILIA (I)	Italien	4123	ZD4	L1e	A	50	SE	RS 50	Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Aprilia
e11	*2000/7*	0071	APRILIA (I)	Italien	4123	ZD4	L1e	A	50	TG		Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Piaggio
e11	*92/61*	0078	Aprilia (I)	Italien		ZD4	L1e	A	49	TL 0/00, TL A/00		Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Minarelli
e11	*92/61*	0079	Aprilia (I)	Italien		ZD4	L1e	A	49	TH 0/00 TH0/01		Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Minarelli
e01	*92/61*	0105	BARBIERI (I)	Italien	4147	ZA9	L1e	A	EM	GO (Electric)	Paperetta	Barbieri Giovanni , Via San L. Murialdo,15, I-36030 Villa Verla Vinzenza	AMER, Italy
e05	*92/61*	0002	BENELLI (I)	Italien	4038	ZBN	L1e	A	49	BA01		Benelli S.p.A., Strada della Fornace Vecchia, I-61100 Pesaro	Minarelli

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e01	*92/61*	0114	BETAMOTOR (I)	Italien	4068	ZD3	L1e	A	49	BS 4		Betamotor S.p.A., Pian dell`Isola, I-50067 Rignano / Arno	Minarelli 20MY
e01	*92/61*	0115	BETAMOTOR (I)	Italien	4068	ZD3	L1e	A	49	BS 5		Betamotor S.p.A., Pian dell`Isola, I-50067 Rignano / Arno	Minarelli 19MA
e01	*92/61*	0144	BETAMOTOR (I)	Italien	4068	ZD3	L1e	A	49	BE		Betamotor S.p.A., Pian dell`Isola, I-50067 Rignano / Arno	Minarelli AM6
e03	*92/61*	0151	CAMPETELLA (I)	Italien	901	ZHE	L1e	A	Electric	DRIN	Standard, Techno, Racing (Elektro)	Campetella Robotic Center s.r.l., Via del molino 34, 62010 Montecassiano (MC)	Campetella (I)
e01	*92/61*	0034	DI BLASI (I)	Italien	4088	-	L1e	A	49,9	R7E	Prototyp	Di Blasi Industriale s.r.l., I-95049 Vizzini (CT) Italy	Di Blasi
e03	*92/61*	0093	GARELLI (I)	Italien		ZG3	L1e	A	50	G1		Garelli Motor Company srl, via delle Milizie 76, I-00192 Roma	QianJiang, Wenling City, China
e03	*92/61*	0092	H.T.M. (I)	Italien	901	2G4	L1e	A	Elektro	AR	Moped	H.T.M. srl, Via Montegrappa 16, Pertegada (DU) Italy	H.T.M. T2CHTM
e12	*92/61*	0003	HONDA (I)	Italien	4124	ZDC	L1e	A	49	ÂF 49Y		Honda Italia Industriale S.P.A., 66040 Piazzano di Atessa (Italy)	Honda
e12	*92/61*	0004	HONDA (I)	Italien	4124	ZDC	L1e	A	49	ÂF 49X		Honda Italia Industriale S.P.A., 66040 Piazzano di Atessa (Italy)	Honda
e03	*92/61*	0102	IRPEM (I)	Italien	901	ZG5	L1e	A	Elektro	ECOWAY	Cyclomotore L1	IRPEM srl, Via Appia Nuova 1031-1043, I-00178 Roma	AMER MP 80S2
e09	*92/61*	0018	ITALJET (I)	Italien	4087	ZJT	L1e	A	49	DRG	Dragster (E0)	Italjet S.p.A., Via Palazzetti, 5, I-40068 San Lazzaro di Savena	Minarelli
e09	*92/61*	0019	ITALJET (I)	Italien	4087	ZJ	L1e	A	49	FRH		Italjet S.p.A., Via Palazzetti, 5, I-40068 San Lazzaro di Savena	Morini Franco
e09	*92/61*	0035	ITALJET (I)	Italien	4087	ZJT	L1e	A	49	TP	Torpedo 50	Italjet S.p.A., Via Palazzetti, 5, I-40068 San Lazzaro di Savena	Piaggio C281
e09	*92/61*	0075	ITALJET (I)	Italien	4087	ZJT	L1e	A	49	JP		Italjet S.p.A., Via Palazzetti, 5, I-40068 San Lazzaro di Savena	Piaggio C215M
eIRL	*92/61*	0002	ITALJET (I)	Italien	4087	ZJT	L1e	A	49	FRH 1BS		Italjet S.p.A., Via Palazzetti, 5, I-40068 San Lazzaro di Savena	Morino Franco
eIRL	*92/61*	0003	ITALJET (I)	Italien	4087	ZJT	L1e	A	49	FRH		Italjet S.p.A., Via Palazzetti, 5, I-40068 San Lazzaro di Savena	Morino Franco
e03	*92/61*	0025	MALAGUTI (I)	Italien		ZJM	L1e	A	49	46	K2 /B1	Malaguti S.p.A., I-40068 S. Lazzaro di Savena	Minarelli 29MY
e03	*92/61*	0038	MALAGUTI (I)	Italien		ZJM	L1e	A	49	48		Malaguti S.p.A., I-40068 S. Lazzaro di Savena	Minarelli 6CY
e03	*92/61*	0136	MALAGUTI (I)	Italien		ZJM	L1e	A	49	64		Malaguti S.p.A., I-40068 S. Lazzaro di Savena	Minarelli 31MY
e03	*92/61*	0026	MALAGUTI (I)	Italien	4104	ZJM	L1e	A	49	47	K2	Malaguti S.p.A., I-40068 S. Lazzaro di Savena	Motori Minarelli
e03	*92/61*	0037	MALAGUTI (I)	Italien	4104	ZJM	L1e	A	49	44	K1 (B1/B2)	Malaguti S.p.A., I-40068 S. Lazzaro di Savena	Motori Minarelli
e03	*92/61*	0071	MALAGUTI (I)	Italien	4104	ZJM	L1e	A	49	62	O1	Malaguti S.p.A., I-40068 S. Lazzaro di Savena	Motori Minarelli
e03	*92/61*	0138	MILLENIUM ELECTRON. (I)	Italien	901	ZHJ	L1e	A	17Volt	MEL01	KKrad, 3-raedrig (239 kg) (19 km/h)	Millenium Electronics S.R.L, Vilesse (GO)	Amer BL70M
e04	*92/61*	0025	MPI	Italien		RFV	L1e	A	49	PE / PGO	P5		MPI PGO P5
e11	*2000/7*	0064	PERIPOLI (I)	Italien	901	ZHG	L1e	A	49,4	T1		PERIPOLI s.p.a., Via della Tecnica 14, 36075 Montecchio Maggiore - (VI) Italy	Morini Franco
e03	*92/61*	0020	piaggio (I)	Italien	4013	ZAP	L1e	A	49	C25		Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio
e03	*92/61*	0040	piaggio (I)	Italien	4013	ZAP	L1e	A	49	C27	Gilera	Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio
e03	*92/61*	0051	piaggio (I)	Italien	4013	ZAP	L1e	A	49	C21	Piaggio/Gilera/Puch	Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio C215M
e03	*92/61*	0104	piaggio (I)	Italien	4013	ZAP	L1e	A	49	C36		Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio C362M

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e03	*92/61*	0125	PIAGGIO (I)	Italien	4013	ZAP	L1e	A	49	C38/1/00		Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio C381M
e09	*92/61*	0041	piaggio (I)	Italien	4013	ZAP	L1e	A	50	C26	Vespa ET4 50	Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio C261M
e09	*92/61*	0045	PIAGGIO (I)	Italien	4013	ZAP	L1e	A	50	C28		Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio C282M
e09	*92/61*	0067	PIAGGIO (I)	Italien	4013	ZAP	L1e	A	49	C34	Piaggio/ Gilera/ Puch	Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio
e09	*92/61*	0086	PIAGGIO (I)	Italien	4013	ZAP	L1e	A	50	GPPR	Piaggio/ Gilera/ Puch	Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Nacional Derbi
e09	*92/61*	0090	PIAGGIO (I)	Italien	4013	ZAP	L1e	A	49,89	VR	Piaggio/ Gilera/ Puch	Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Nacional Derbi EVE050E
e09	*92/61*	0107	PIAGGIO (I)	Italien	4013	ZAP	L1e	A	49	C24		Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio C241
e11	2000/7	0076	Piaggio (I)	Italien		ZAP	L1e	A	49	C40/100		Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio
e11	*92/61*	0039	PIAGGIO (I)	Italien	4013	ZAP	L1e	A	49	C32		Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio
e11	*92/61*	0052	PIAGGIO (I)	Italien	4013	ZAP	L1e	A	49	C37		Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio
e09	*92/61*	0011	SIAM (i)	Italien	901	ZED	L1e	A	49,8	BR10	Birdie 50	Siam s.p.a., 81030 Gricignano di Aversa Italy	SIAMOTO
e03	*92/61*	0149	TEAM AZZALIN (I)	Italien	901	ZHM	L1e	A	49,7	CH 50	CH RACING	Team Azzalin,via delle Cerelle,4, Albizzate (VA)	Minarelli AM6
e11	*92/61*	0001	APRILIA (I)	Italien	4123	ZD4	L1e	A	50	PK	Habana	Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Aprilia
e11	*2000/7*	0060	APRILIA (I)	Italien	4123	ZD4	L6e	A	49	AF	Quasar 50	Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	AEON
e03	*92/61*	0005	APRILIA (I)	Italien	4123	ZD4	L3e	B	101	RE		Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	(Yamaha / Minarelli) 4VP
e03	*92/61*	0172	Honda	Italien		ZDC	L3e	B	125	JF 12		Honda Italia Industriale S.P.A., 66040 Piazzano di Atessa (Italy)	Honda JF12E
e13	*92/61*	0061	Honda	Italien		ZDC	L3e	B	125	JC 33		Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Thai Honda
e03	*92/61*	0073	HONDA (I)	Italien	4124	ZDC	L3e	B	125	JF09		Honda Italia Industriale S.P.A., 66040 Piazzano di Atessa (Italy)	Honda
e03	*2000/7*	0122	HONDA (I)	Italien	4124	ZDC	L3e	B	125	JF10		Honda Italia Industriale S.P.A., 66040 Piazzano di Atessa (Italy)	Honda
e04	*92/61*	0082	HONDA (I)	Italien	4124	ZDC	L3e	B	125	JF07		Honda Italia Industriale S.P.A., 66040 Piazzano di Atessa (Italy)	Honda
e09	*92/61*	0021	ITALJET (I)	Italien	4087	ZJF	L3e	B	101	FC		Italjet S.p.A., Via Palazzetti, 5, I-40068 San Lazzaro di Savena	Minarelli 4MC
e01	*92/61*	0042	MALAGUTI (I)	Italien	4104	ZJM	L3e	B	124	53		Malaguti S.p.A., I-40068 S. Lazzaro di Savena	Motori Minarelli
e01	*92/61*	0049	MALAGUTI (I)	Italien	4104	ZJM	L3e	B	95	50		Malaguti S.p.A., I-40068 S. Lazzaro di Savena	Motori Minarelli
e03	*92/61*	0029	MV AGUSTA (I)	Italien	4060	ZCG	L3e	B	124,8	H2	Husqvarna	MV Augusta Motor S.p.A., Via N. Bixio Nr. 8, I-21024 Biandronno (VA)	MV Augusta
e03	*92/61*	0066	MV AGUSTA (I)	Italien	4060	ZCG	L3e	B	124,8	N3	MITO, PLANET	MV Augusta Motor S.p.A., Via N. Bixio Nr. 8, I-21024 Biandronno (VA)	MV Augusta
e03	*92/61*	0091	MV AGUSTA (I)	Italien	4060	ZCG	L3e	B	124,8	2H	HUSQVARNA 2H	MV Augusta Motor S.p.A., Via N. Bixio Nr. 8, I-21024 Biandronno (VA)	MV Augusta
e03	*92/61*	0065	PIAGGIO (I)	Italien	4013	ZAP	L3e	B	124	M26	M26000 Roller	Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e03	*92/61*	0015	piaggio (I)	Italien	4013	ZAP	L3e	B	124	M22		Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio
e09	*92/61*	0063	PIAGGIO (I)	Italien	4013	ZAP	L3e	B	96	M29		Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio M291M
e09	*92/61*	0068	PIAGGIO (I)	Italien	4013	ZAP	L3e	B	84	M30	Piaggio/ Gilera/ Puch	Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Nacional
e09	*92/61*	0012	SIAM (i)	Italien	901	ZED	L3e	B	97	BD20	BD100	Siam s.p.a., 81030 Gricignano di Aversa Italy	SIAMOTO
e09	*92/61*	0013	SIAM (i)	Italien	901	ZED	L3e	B	124	CL30	Columbus 125	Siam s.p.a., 81030 Gricignano di Aversa Italy	SIAMOTO
e03	*92/61*	0036	SIAMOTO (I)	Italien	4139	ZED	L3e	B	124	CL3001		Siam s.p.a., 81030 Gricignano di Aversa Italy	SIAMOTO
e11	*2000/7*	0059	APRILIA (I)	Italien	4123	ZD4	L7e	B	96	AT	Quasar 100	Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	AEON Motor
e03	*92/61*	0124	APRILIA (I)	Italien	4123	ZD4	L3e	B und C	125/151	TB		Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Rotax Bombardier
e11	*92/61*	0025	APRILIA (I)	Italien	4123	ZD4	L3e	B und C	124/150	RY	Habana 125 / 150 Roller	Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Piaggio (Italy)
e11	*92/61*	0034	APRILIA (I)	Italien	4123	ZD4	L3e	B und C	125/176	SD Scarabeo-200	Scarabeo 180	Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Bombardier-Rotax 177S
e11	*92/61*	0053	APRILIA (I)	Italien	4123	ZD4	L3e	B und C	125	SF	RS 125	Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	-
e11	*2000/7*	0073	APRILIA (I)	Italien	4123	ZD4	L3e	B und C	124/198	SP		Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Piaggio
e01	*92/61*	0086	BETAMOTOR (I)	Italien	4068	ZD3	L3e	B und C	152/125	S7	-	Betamotor S.p.A., Pian dell`Isola, I-50067 Rignano / Arno	-
e01	*92/61*	0092	BETAMOTOR (I)	Italien	4068	ZD3	L3e	B und C	125/199	T1		Betamotor S.p.A., Pian dell`Isola, I-50067 Rignano / Arno	Suzuki H402
e03	*92/61*	0043	piaggio (I)	Italien	4013	ZAP	L3e	B und C	144/182	M24	Gilera	Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio M241M
e11	*92/61*	0018	PIAGGIO (I)	Italien	4013	ZAP	L3e	B und C	124/150/151	M21		Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio
e09	*92/61*	0028	SIAM (I)	Italien	901	ZED	L3e	B und C	124/148	FV	FV30/ FV40	Siam s.p.a., 81030 Gricignano di Aversa Italy	SIAMOTO
e11	*2000/7*	0063	APRILIA (I)	Italien	4123	ZD4	L3e	C	250	SV		Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Yamaha / Minarelli
e03	*92/61*	0008	BENELLI (I)	Italien	4038	ZBN	L3e	C	250	M7		Benelli S.p.A., Strada della Fornace Vecchia, I-61100 Pesaro	Yamaha YP250
e01	*92/61*	0125	BETAMOTOR (I)	Italien	4068	ZD3	L3e	C	349	BC	EIKON 150	Betamotor S.p.A., Pian dell`Isola, I-50067 Rignano / Arno	Suzuki K404
e03	*92/61*	0171	Honda (I)	Italien		ZDC	L3e	C	153	KF 06	11,7kw	Honda Italia Industriale S.P.A., 66040 Piazzano di Atessa (Italy)	Honda KF06E
e03	*92/61*	0011	HONDA (I)	Italien	4124	ZDC	L3e	C	249	MF05	Foresight FES250	Honda Italia Industriale S.P.A., 66040 Piazzano di Atessa (Italy)	Honda MF04E
e03	*92/61*	0064	HONDA (I)	Italien	4124	ZDC	L3e	C	249	MF07		Honda Italia Industriale S.P.A., 66040 Piazzano di Atessa (Italy)	Honda
e03	*92/61*	0074	HONDA (I)	Italien	4124	ZDC	L3e	C	153	KF04		Honda Italia Industriale S.P.A., 66040 Piazzano di Atessa (Italy)	Honda
e03	*2000/7*	0123	HONDA (I)	Italien	4124	ZDC	L3e	C	153	KF05		Honda Italia Industriale S.P.A., 66040 Piazzano di Atessa (Italy)	Honda
e04	*92/61*	0083	HONDA (I)	Italien	4124	ZDC	L3e	C	153	KF03		Honda Italia Industriale S.P.A., 66040 Piazzano di Atessa (Italy)	Honda
e09	*92/61*	0029	ITALJET (I)	Italien	4087	ZJT	L3e	C	150	T2		Italjet S.p.A., Via Palazzetti, 5, I-40068 San Lazzaro di Savena	Piaggio M221M

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e09	*92/61*	0071	ITALJET (I)	Italien	4087	ZJT	L3e	C	249	JC		Italjet S.p.A., Via Palazzetti, 5, I-40068 San Lazzaro di Savena	Minarelli 3IS
e09	*92/61*	0072	ITALJET (I)	Italien	4087	ZJT	L3e	C	150	JK		Italjet S.p.A., Via Palazzetti, 5, I-40068 San Lazzaro di Savena	Piaggio
e01	*92/61*	0043	MALAGUTI (I)	Italien	4104	ZJM	L3e	C	250	54		Malaguti S.p.A., I-40068 S. Lazzaro di Savena	Motori Minarelli
e01	*92/61*	0058	MALAGUTI (I)	Italien	4104	ZJM	L3e	C	152	55		Malaguti S.p.A., I-40068 S. Lazzaro di Savena	Motori Minarelli
e03	*92/61*	0090	MALAGUTI (I)	Italien	4104	ZJM	L3e	C	383	61		Malaguti S.p.A., I-40068 S. Lazzaro di Savena	Morini Franco
e03	*92/61*	0119	MALAGUTI (I)	Italien	4104	ZJM	L3e	C	198	65		Malaguti S.p.A., I-40068 S. Lazzaro di Savena	Piaggio
e01	*92/61*	0111	MOTO LAVERDA (I)	Italien	4095	ZG0	L3e	C	150	LA 15W-6	KV	Moto Laverda Srl, International I.mo.La., Via Monte Pasubio 119, I-36010 Zané (Vicenca)	SangYang Industry Taipei/Taiwan
e03	*92/61*	0086	PIAGGIO (I)	Italien	4013	ZAP	L3e	C	198	M28	Beverly 200	Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio M281M
e03	*92/61*	0013	piaggio (I)	Italien	4013	ZAP	L3e	C	182	M20		Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio M201M
e11	*92/61*	0002	piaggio (I)	Italien	4013	ZAP	L3e	C	150	M19		Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio
e11	*92/61*	0022	piaggio (I)	Italien	4013	ZAP	L3e	C	182 / 249	M23	M23/01/00 (Zweirad Honda 249 cc/Dreirad Piaggio 182 cc)	Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Honda/ Piaggio
e11	*2000/7*	0067	PIAGGIO (I)	Italien	4013	ZAP	L3e	C	459	M32		Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio
e03	*92/61*	0042	VERTEMATI (I)	Italien	901	ZA9	L3e	C	501	501	two-wheel	VERTEMATI Racing di Vertemati Guido sas, Via Brovada 4, I-20050 Triuggio (MI)	Vertemati 501
e11	*2000/7*	0072	APRILIA (I)	Italien	4123	ZD4	L3e	C und D	459	RT		Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Piaggio
e03	*92/61*	0017	HONDA (I)	Italien	4124	ZDC	L3e	C und D	647	RD10	XL650V Transalp	Honda Italia Industriale S.P.A., 66040 Piazzano di Atessa (Italy)	Honda RD10E
e03	*92/61*	0097	APRILIA (I)	Italien	4123	ZD4	L3e	C und D	459	PT	Roller	Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Piaggio (Italy) M271M
e03	*92/61*	0142	DUCATI (I)	Italien	4042	ZDM	L3e	C und D	618	V5	620SS/ 620S	Ducati Motor S.p.a., Via Cavalieri Ducati 3, I-40132 Bologna	Ducati Motor S.p.A.
e03	*92/61*	0101	HONDA (I)	Italien	4124	ZDC	L3e	C und D	600	PC36		Honda Italia Industriale S.P.A., 66040 Piazzano di Atessa (Italy)	Honda
e03	*92/61*	0126	moto (I)	Italien	901	ZEN	L3e	C und D	449	F450	HM	Moto S.p.A., Via Provinciale 50, I-23813 Cortenova (LC)	Honda F450
e11	*92/61*	0033	MOTO-GUZZI (I)	Italien	4003	KD1	L3e	C und D	1064	KD	California Evoluzione/ Spezial; California Jackal	Moto Guzzi G.B.M. S.p.A., Via E.V. Parodi,57, I-22954 Mandello del Lario	Moto Guzzi (I)
e03	*92/61*	0094	MV AGUSTA (I)	Italien	4060	ZCG	L3e	C und D	360/250	3H	HUSQVARNA 3H	MV Augusta Motor S.p.A., Via N. Bixio Nr. 8, I-21024 Biandronno (VA)	MV Augusta
e03	*92/61*	0100	MV AGUSTA (I)	Italien	4060	ZCG	L3e	C und D	250/400/450	H8	HUSQVARNA H8	MV Augusta Motor S.p.A., Via N. Bixio Nr. 8, I-21024 Biandronno (VA)	MV Augusta
e04	*92/61*	0060	suzuki (j)	Italien	7102	JS1	L3e	C und D	600	WVA8	GSF600; S; U; SU	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki
e03	*92/61*	0103	V.O.R.MOTORI (I)	Italien	901	ZF8	L3e	C und D	400/450/530/570	V STAR		V.O.R. Milano Italy	V.O.R. Motori
e03	*92/61*	0057	APRILIA (I)	Italien	4123	ZD4	L3e	D	998	PW	RST 1000 FUTURA	Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Rotax Bombardier V990
e11	*92/61*	0003	aprilia (i)	Italien	4123	ZD4	L3e	D	998	PA	SL 1000	Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Bombardier-Rotax
e11	*92/61*	0027	APRILIA (I)	Italien	4123	ZD4	L3e	D	998	RP	RSV 1000	Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Bombardier-Rotax

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e11	*92/61*	0031	APRILIA (I)	Italien	4123	ZD4	L3e	D	998	PS	ETV 1000 Capo Nord	Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Bombardier-Rotax
e11	*92/61*	0032	APRILIA (I)	Italien	4123	ZD4	L3e	D	652	RW	Pegaso 650 i.e	Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	Bombardier-Rotax
e01	*92/61*	0116	BELGARDA (I)	Italien	4133	5JN	L3e	D	1063	RP05	TÜV NORD	Belgarda S.p.A., Gerno di Lesmo (MI) Italy	Yamaha P510E
e03	*92/61*	0118	Benelli (I)	Italien	-	ZBN	L3e	D	900 ???	B3	Tornado ???	Benelli S.p.A., Strada della Fornace Vecchia, I-61100 Pesaro	
e11	*92/61*	0012	BIMOTA (I)	Italien	4091	ZES	L3e	D	996	SB8 - R		Bimota Motor S.P.A., Via Giaccaglia 38 I-47900 Rimini	Suzuki (J)
e11	*92/61*	0020	BIMOTA (I)	Italien	4091	ZES	L3e	D	904	DB4 J		Bimota Motor S.P.A., Via Giaccaglia 38 I-47900 Rimini	Ducati (I)
e01	*92/61*	0005	Ducati (I)	Italien		_	L3e	D	_	V1?		Ducati Motor S.p.a., Via Cavalieri Ducati 3, I-40132 Bologna	
e01	*92/61*	0004	DUCATI (I)	Italien	4042	ZDM	L3e	D	904	V1	Ducati 900 SS i.e.	Ducati Motor S.p.a., Via Cavalieri Ducati 3, I-40132 Bologna	Ducati Motor S.p.A.
e01	*92/61*	0012	DUCATI (I)	Italien	4042	ZDM	L3e	D	996	H2	Ducati 996	Ducati Motor S.p.a., Via Cavalieri Ducati 3, I-40132 Bologna	Ducati Motor S.p.A.
e01	*92/61*	0013	DUCATI (I)	Italien	4042	ZDM	L3e	D	916	S2	Ducati ST4	Ducati Motor S.p.a., Via Cavalieri Ducati 3, I-40132 Bologna	Ducati Motor S.p.A.
e01	*92/61*	0025	DUCATI (I)	Italien	4042	ZDM	L3e	D	583	M3	Ducati M6000	Ducati Motor S.p.a., Via Cavalieri Ducati 3, I-40132 Bologna	Ducati Motor S.p.A.
e01	*92/61*	0026	DUCATI (I)	Italien	4042	ZDM	L3e	D	748	V2	Ducati 750 SS i.e.	Ducati Motor S.p.a., Via Cavalieri Ducati 3, I-40132 Bologna	Ducati Motor S.p.A.
e01	*92/61*	0030	DUCATI (I)	Italien	4042	ZDM	L3e	D	944	S1	Ducati ST 2	Ducati Motor S.p.a., Via Cavalieri Ducati 3, I-40132 Bologna	Ducati Motor S.p.A.
e01	*92/61*	0037	DUCATI (I)	Italien	4042	ZDM	L3e	D	748	H3	Ducati 748	Ducati Motor S.p.a., Via Cavalieri Ducati 3, I-40132 Bologna	Ducati Motor S.p.A.
e01	*92/61*	0051	DUCATI (I)	Italien	4042	ZDM	L3e	D	904	M2	Ducati	Ducati Motor S.p.a., Via Cavalieri Ducati 3, I-40132 Bologna	Ducati Motor S.p.A.
e01	*92/61*	0052	DUCATI (I)	Italien	4042	ZDM	L3e	D	748	M1	Ducati	Ducati Motor S.p.a., Via Cavalieri Ducati 3, I-40132 Bologna	Ducati Motor S.p.A.
e01	*92/61*	0096	DUCATI (I)	Italien	4042	ZDM	L3e	D	996	H1	Ducati	Ducati Motor S.p.a., Via Cavalieri Ducati 3, I-40132 Bologna	Ducati Motor S.p.A.
e03	*92/61*	0030	DUCATI (I)	Italien	4042	ZDM	L3e	D	916	M4	Ducati	Ducati Motor S.p.a., Via Cavalieri Ducati 3, I-40132 Bologna	Ducati Motor S.p.A.
e03	*92/61*	0147	DUCATI (I)	Italien	4042	ZDM	L3e	D	998	h4		Ducati Motor S.p.a., Via Cavalieri Ducati 3, I-40132 Bologna	Ducati Motor S.p.A.
e03	*92/61*	0153	DUCATI (I)	Italien	4042	ZDM	L3e	D	748	h5	749	Ducati Motor S.p.a., Via Cavalieri Ducati 3, I-40132 Bologna	Ducati Motor S.p.A.
e11	*92/61*	0028	GHEZZI & BRIAN (I)	Italien	901	STW001	L3e	D	1063	STW	Prototyp	Ghezzi & Brian srl, Via Roncada,9, I-23888 Perego (Lecco)	Moto Guzzi LC
e03	*92/61*	0156	MONDIAL (I)	Italien	4012	ZA9	L3e	D	999	PIEGA		Mondial Moto S.p.A., Via Brescia, 36, I-25025 Manerbio (BS)	Honda SC45E
e03	*92/61*	0007	MOTO-GUZZI (I)	Italien	4003	ZGU	L3e	D	1064	KR		Moto Guzzi G.B.M. S.p.A., Via E.V. Parodi,57, I-22954 Mandello del Lario	Moto Guzzi KR
e03	*92/61*	0010	MOTO-GUZZI (I)	Italien	4003	ZGU	L3e	D	744	LK		Moto Guzzi G.B.M. S.p.A., Via E.V. Parodi,57, I-22954 Mandello del Lario	Moto Guzzi LT
e11	*92/61*	0055	MOTO-GUZZI (I)	Italien	4003	-	L3e	D	-	KT	V11	Moto Guzzi G.B.M. S.p.A., Via E.V. Parodi,57, I-22954 Mandello del Lario	
e11	*92/61*	0081	MOTO-GUZZI (I)	Italien		KD1	L3e	D	744	LL 0 00		Moto Guzzi G.B.M. S.p.A., Via E.V. Parodi,57, I-22954 Mandello del Lario	Moto Guzzi

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e03	*92/61*	0018	MV AGUSTA (I)	Italien	4060	ZCG	L3e	D	996	M2	Cagiva	MV Augusta Motor S.p.A., Via N. Bixio Nr. 8, I-21024 Biandronno (VA)	Suzuki
e03	*92/61*	0024	MV AGUSTA (I)	Italien	4060	ZCG	L3e	D	749	F4	MV F4 750 (F2)	MV Augusta Motor S.p.A., Via N. Bixio Nr. 8, I-21024 Biandronno (VA)	MV Augusta
e03	*92/61*	0032	MV AGUSTA (I)	Italien	4060	ZCG	L3e	D	996	M5	Cagiva	MV Augusta Motor S.p.A., Via N. Bixio Nr. 8, I-21024 Biandronno (VA)	Suzuki T501
e11	*92/61*	0038	PIAGGIO (I)	Italien	4013	ZAP	L3e	D	459	M27		Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio
e11	*2000/7*	0070	PIAGGIO (I)	Italien	4013	ZAP	L3e	D	459	M34		Piaggio C.S.p.A., Viale Rinaldo Piaggio,25, I-56025 Pontedera/Pisa	Piaggio
e04	*92/61*	0012	suzuki (j)	Italien	7102	JS1	L3e	D	1299	WVA1	GSX 1300 R	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki
e04	*92/61*	0066	suzuki (j)	Italien	7102	JS1	L3e	D	398	WVBC	DR-Z400S	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki
e03	*92/61*	0006	VOR MOTORI (I)	Italien	901	-	L3e	D	175, 35kW	FST	Victor	VOR Motori, Via E. Brigatti, I-20050 Ronco Briatino (MI)	
e03	*92/61*	0135	FINARDI (I)	Italien	901	ZA9	L6e	entfällt	49	FNR2AA	Leichte Vierradfz.	Offincina Finardi Giovannino & C. SNC, Agoiolo di Casalmaggiore (CR), St. Prov le Bassa No. 35	Motor-Union Ltd. Lugano (CH) JC50Q
e03	*92/61*	0127	H.T.M. (I)	Italien	901	2G4	L6e	entfällt	Elektro	7.0	leichtes Vierrad-Fz. (600 W/h)	H.T.M. srl, Via Montegrappa 16, Pertegada (DU) Italy	H.T.M. T2CHTM
e03	*92/61*	0140	H.T.M. (I)	Italien	901	2G4	L6e	entfällt	Elektro	MINICAR	leichtes Vierrad-Fz. (600 W/h)	H.T.M. srl, Via Montegrappa 16, Pertegada (DU) Italy	H.T.M. T2CHTM
e11	*92/61*	0015	LMP (I)	Italien	901	ZA9	L6e	entfällt	49,4	PLC	KVN PLC (4-Rad Moped) (45 km/h)	LMP s.a.s. di Lavelli C & C, Via Provinciale 23879 Verderio Inferiore (Lecco) Italy	Morini Franco FM
e11	*2000/7*	0066	LMP (I)	Italien	901	ZA9	L6e	entfällt	49/50	CNZ	KVN (4-wheel-moped)	LMP s.a.s. di Lavelli C & C, Via Provinciale 23879 Verderio Inferiore (Lecco) Italy	Piaggio
e11	*2000/7*	0058	Moto LAVERDA (I)	Italien	4052	ZG0	L6e	entfällt	49	AF	Quasar 50 (Quadricycle)	Moto Laverda Srl, International I.mo.La., Via Monte Pasubio 119, I-36010 Zané (Vicenca)	AEON
e03	*92/61*	0096	KL S.R.L. NIARDO (I)	Italien	901	-	L6e oder L7e	entfällt	-	KY	leichtes Vierradfz. (Quad) nur COC	?	
e13	*92/61*	0014	CASALINI (I)	Italien	901	ZD5	L7e	entfällt	538	10	(Klein-PKW)	Casalini s.r.l., Via Rigolli 36, I- 29100 Piacenza	Mitsubishi L2C
e13	*92/61*	0056	CASALINI (I)	Italien	901	ZD5	L7e	entfällt	538	11	Klein-PKW	Casalini s.r.l., Via Rigolli 36, I- 29100 Piacenza	Mitsubishi (J)
e09	*92/61*	0002	GRECAV (I)	Italien	901	ZD6	L7e	entfällt	315	A4	LN; LM (Klein-PKW)	Grecav spa, Via Anselmo Guerrieri 28, 46023 Gonzaga (MN) Italy	Lombardini 15LD315
e09	*92/61*	0026	GRECAV (I)	Italien	901	ZD6	L7e	entfällt	505	EKE	Klein-PKW	Grecav spa, Via Anselmo Guerrieri 28, 46023 Gonzaga (MN) Italy	Lombardini LDW502/M4
e11	*2000/7*	0065	LMP (I)	Italien	901	ZA9	L7e	entfällt	151 / 198	GTH	KVN (4-Rad)	LMP s.a.s. di Lavelli C & C, Via Provinciale 23879 Verderio Inferiore (Lecco) Italy	Piaggio
e03	*92/61*	0150	M.G.M. (I)	Italien	901	ZA9	L7e	entfällt	627	MISTRAL K630	Mistral K630 (13kw, Vierrad)	M.G.M S.p.A., I-20010 S Stefano Ticino (MI)	Briggs & Stratton, Milwaukee USA
e11	*2000/7*	0056	Moto LAVERDA (I)	Italien	4052	ZG0	L7e	entfällt	125/169	KY	Quasar 180/ Quasar 125	Moto Laverda Srl, International I.mo.La., Via Monte Pasubio 119, I-36010 Zané (Vicenca)	AEON
e11	*2000/7*	0057	Moto LAVERDA (I)	Italien	4052	ZG0	L7e	entfällt	96	AT	Quasar 100	Moto Laverda Srl, International I.mo.La., Via Monte Pasubio 119, I-36010 Zané (Vicenca)	AEON
e03	*92/61*	0155	QUADDY (I)	Italien	901	ZHD	L7e	entfällt	-	YFM 660 FWA	leichtes Vierrad-Fz.		
e03	*92/61*	0144	QUADDY (I)	Italien	901	ZHD	L7e	entfällt	401	YFM 400 FWA	leichtes Vierrad-Fz. (14 KW) Otto	Quaddy s.r.l., via Foligno 110, I-10149 Torino	Yamaha 5GH
e03	*92/61*	0145	QUADDY (I)	Italien	901	ZHD	L7e	entfällt	124,4	125 3FA	leichtes Vierrad-Fz. (6,3 KW) Otto	Quaddy s.r.l., via Foligno 110, I-10149 Torino	Yamaha 3FA
e11	*2000/7*	0061	APRILIA (I)	Italien	4123	ZD4	L7e	entfällt	169/125	KY	Quasar 180/ Quasar 125	Aprilia Spa, Via Galileo Galilei 1, I-30033 Noale (VE)	AEON

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e01	*92/61*	0056	KAWASAKI (J)	Japan	7103	JKA	L3e	B	124	BN 125 A	Eliminator	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e01	*92/61*	0137	KAWASAKI (J)	Japan	7103	MH4	L3e	B	112	AN 112 E	KAZE-R	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e04	*92/61*	0049	suzuki (J)	Japan	7102	JS1	L3e	B	113	WVA7	UG110	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki F129
e04	*92/61*	0115	SUZUKI (J)	Japan	7102	JS1	L3e	B	124	WVBH	UE125CT	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki F440
e04	*92/61*	0136	SUZUKI (J)	Japan	7102	JS1	L3e	B	124	WVA4	VL125/U	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki F501/502
e04	*92/61*	0161	Suzuki (J)	Japan		JS1	L3e	B	125	WVBT	Suzuki, Kawasaki	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki F447
e01	*92/61*	0133	YAMAHA (J)	Japan	7101	JYA	L3e	B	125	DE05		Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha E306E
e13	*92/61*	0022	YAMAHA (J)	Japan	7101	JYA	L3e	B	124	VE01		Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha E601E
e13	*92/61*	0034	HONDA MOTOR (J)	Japan	7100	JH2	L3e	C	249	MF06		Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda
e01	*92/61*	0075	KAWASAKI (J)	Japan	7103	JKA	L3e	C	253	EL 250 B	EL 252	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e01	*92/61*	0076	KAWASAKI (J)	Japan	7103	JKA	L3e	C	249	EX 250 H	EX 250 EE	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e04	*92/61*	0043	KAWASAKI (J)	Japan	7103	JKA	L3e	C	249	VN 250 A	VN 250A Eleminator	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e04	*92/61*	0098	SUZUKI (J)	Japan	7102	JS1	L3e	C	249	WVAN	AN 250	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki
e04	*92/61*	0099	SUZUKI (J)	Japan	7102	JS1	L3e	C	385	WVAU	AN 400	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki
e04	*92/61*	0117	SUZUKI (J)	Japan	7102	JS1	L3e	C	152	WVBJ	UE150CT	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki G413
e04	*92/61*	0135	SUZUKI (J)	Japan	7102	JS1	L3e	C	248	WVA5	VL250	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki
e04	*92/61*	0176	SUZUKI (J)	Japan	7102	JS1	L3e	C	249	WVBV	AN250	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki J436
e04	*92/61*	0177	SUZUKI (J)	Japan	7102	JS1	L3e	C	385	WVBW	AN400	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Sukuki K429
e01	*92/61*	0062	yamaha (J)	Japan	7101	JYA	L3e	C	250	SG04	Yamaha ; MBK	Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha
e01	*92/61*	0106	yamaha (J)	Japan	7101	JYA	L3e	C	250	CG		Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha
e13	*92/61*	0035	YAMAHA (J)	Japan	7101	JYA	L3e	C	249	VG03		Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha
e04	*92/61*	0101	HONDA MOTOR (J)	Japan	7100	JH2	L3e	C und D	599	PC35		Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda

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e01	*92/61*	0008	KAWASAKI (J)	Japan	7103	JKB	L3e	C und D	805	VN 800 C	VN 800 Drifter	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki VN800AE
e01	*92/61*	0009	KAWASAKI (J)	Japan	7103	JKB	L3e	C und D	1471	VNT 50J	VN 1500 Drifter	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e01	*92/61*	0010	KAWASAKI (J)	Japan	7103	JKA	L3e	C und D	652	KL 650 C	KLR 650	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e01	*92/61*	0023	KAWASAKI (J)	Japan	7103	JKA	L3e	C und D	739	ZR 750 F	ZR-7	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e01	*92/61*	0039	KAWASAKI (J)	Japan	7103	JKA	L3e	C und D	499	ER 500 A	ER 5	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e01	*92/61*	0055	KAWASAKI (J)	Japan	7103	JKA	L3e	C und D	1471	VNT 50 G	VN 1500 Classic Tourer Fi	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e01	*92/61*	0073	KAWASAKI (J)	Japan	7103	JKA	L3e	C und D	499	EN 500 A	EN 500	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e01	*92/61*	0074	KAWASAKI (J)	Japan	7103	JKA	L3e	C und D	499	LE 500 A	KLE 500	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e01	*2000/7*	0141	KAWASAKI (J)	Japan	7103		L3e	C und D	636	ZX 636 A	NINJA ZX-6R	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e04	*92/61*	0063	KAWASAKI (J)	Japan	7103		L3e	C und D	1471	VNT50N	VN 1500 CLASSIC Fi	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e04	*92/61*	0106	KAWASAKI (J)	Japan	7103		L3e	C und D	1165		ZRX1200-/R/S	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e04	*92/61*	0132	KAWASAKI (J)	Japan	7103	JKA	L3e	C und D	499	EX500D	GPZ500D	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e04	*92/61*	0042	KAWASAKI (J)	Japan	7103	JKA	L3e	C und D	599	ZX 600 J		Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e04	*92/61*	0105	SUZUKI (J)	Japan	7102	JS1	L3e	C und D	487	WVBK	GS500 -/H/U/HU	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki
e04	*92/61*	0192	Suzuki (J)	Japan		JS1	L3e	C und D	645	WVBY		Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki P507,508
e01	*92/61*	0094	yamaha (J)	Japan	7101	JYA	L3e	C und D	649	VM03		Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha
e04	*92/61*	0187	Honda	Japan		ZDC	L3e	D	1284	SC 54		Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda SC54E
e04	*92/61*	0190	Honda	Japan		ZDC	L3e	D	599	PC 37		Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda PC37E
e13	*92/61*	0052	Honda	Japan		ZDC	L3e	D	954	SC 50		Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda SC50E

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e04	*92/61*	0009	honda (J)	Japan	7100	JH2	L3e	D	996	SD01	SD01	Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda
e04	*92/61*	0026	honda (J)	Japan	7100	JH2	L3e	D	1137	SC42		Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda
e13	*92/61*	0043	Honda (J)	Japan		JH2	L3e	D	1137	SC 35	Honda	Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda SC35E
e04	*92/61*	0085	HONDA MOTOR (J)	Japan	7100	JH2	L3e	D	745	RC48		Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda
e01	*92/61*	0132	HONDA MOTOR (J)	Japan	7100	JH2	L3e	D	782	RC46		Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda
e01	*2000/7*	0147	HONDA MOTOR (J)	Japan	7100	JH2	L3e	D	1261	SC51	SC51E	Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda
e04	*92/61*	0061	HONDA MOTOR (J)	Japan	7100	JH2	L3e	D	999	SC 45		Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda
e04	*92/61*	0102	HONDA MOTOR (J)	Japan	7100	JH2	L3e	D	745	RC44		Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda
e04	*92/61*	0114	HONDA MOTOR (J)	Japan	7100	JH2	L3e	D	582	PF01		Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda
e13	*92/61*	0019	HONDA MOTOR (J)	Japan	7100	JH2	L3e	D	929	SC44		Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda
e13	*92/61*	0020	HONDA MOTOR (J)	Japan	7100	JH2	L3e	D	599	PC34		Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda
e13	*2000/7*	0042	HONDA MOTOR (J)	Japan	7100	JH2	L3e	D	1137	SC35		Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda
e13	*2000/7*	0044	HONDA MOTOR (J)	Japan	7100	JH2	L3e	D	996	SC36		Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda
e13	*92/61*	0051	HONDA MOTOR (J)	Japan	7100	JH2	L3e	D	919	SC48		Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda
e13	*2000/7*	0052	HONDA MOTOR (J)	Japan	7100	JH2	L3e	D	954	SC50		Honda Motor Co. Ltd., 2-1-1 Minami Aoyama, J-Minatoku, Tokyo 107	Honda
e01	*92/61*	0022	KAWASAKI (J)	Japan	7103	JKA	L3e	D	998	ZGT 00A	1000 GTR	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e01	*92/61*	0054	KAWASAKI (J)	Japan	7103	JKA	L3e	D	899	ZX 900 E		Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e01	*92/61*	0065	KAWASAKI (J)	Japan	7103	JKA	L3e	D	1199	ZXT20A	Ninja ZX-12R	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e01	*92/61*	0117	KAWASAKI (J)	Japan	7103	JKB	L3e	D	1471	VNT50P		Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e01	*2000/7*	0142	KAWASAKI (J)	Japan	7103	JKA	L3e	D	1165	ZXT 20 C	ZZ-R1200	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e01	*92/61*	0172	KAWASAKI (J)	Japan	7103	JKA	L3e	D	953	ZRT00A	Z1000	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e01	*92/61*	0173	KAWASAKI (J)	Japan	7103	JKB	L3e	D	1553	VNT60A	VN 1600 CLASSIC	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki

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e01	*92/61*	0174	KAWASAKI (J)	Japan	7103	JKA	L3e	D	599	ZX600K	NINJA ZX-6RR	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e04	*92/61*	0010	KAWASAKI (J)	Japan	7103		L3e	D	676	EJ650A	W 650	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e04	*92/61*	0011	KAWASAKI (J)	Japan	7103		L3e	D	1052	ZRT10C	ZXR 1100	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e04	*92/61*	0131	KAWASAKI (J)	Japan	7103	JKA	L3e	D	600	ZX600E	ZZ-R600	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e04	*92/61*	0133	KAWASAKI (J)	Japan	7103		L3e	D	805	VN800A	VN800 CLASSIC	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e04	*92/61*	0180	KAWASAKI (J)	Japan	7103		L3e	D	636	ZX636B	NINJA ZX-6R	Kawasaki Heavy industries Ltd., Consumer Product group, 1-1 Kawasaki-cho Akashi-city, J-Hyogo Pref. 673 Japan	Kawasaki
e01	*92/61*	0099	SUZUKI (J)	Japan	7102	JS1	L3e	D	1462	WVAL	VL1500	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki
e04	*92/61*	0068	SUZUKI (J)	Japan	7102	JS1	L3e	D	749	WVBD	BD1111/2: GSX-R750	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki
e04	*92/61*	0068	SUZUKI (J)	Japan	7102	JS1	L3e	D	749	WVBD	BD2112: GSX-R750U1	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki
e04	*92/61*	0068	SUZUKI (J)	Japan	7102	JS1	L3e	D	749	WVBD	BD3112: GSX-R750U2	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki
e04	*92/61*	0086	SUZUKI (J)	Japan	7102	JS1	L3e	D	1157	WVA9	GSF 1200/ GSF 1200S	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki
e04	*92/61*	0100	SUZUKI (J)	Japan	7102	JS1	L3e	D	599	WVBG	R600/U1/U2	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki
e04	*92/61*	0108	SUZUKI (J)	Japan	7102	JS1	L3e	D	988	WVBL	GSX-R1000 -/U1/U2	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki
e04	*92/61*	0109	SUZUKI (J)	Japan	7102	JS1	L3e	D	805	WVBM	VL800	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki
e04	*92/61*	0116	SUZUKI (J)	Japan	7102	JS1	L3e	D	1402	WVBN	GSX1400 / GSX1400U	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki
e04	*2000/7*	0142	SUZUKI (J)	Japan	7102	JS1	L3e	D	996	WVBS	DL 1000	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki T507
e04	*92/61*	0151	SUZUKI (J)	Japan	7102	JS1	L3e	D	638	WVBU	AN650	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki P506
e04	*92/61*	0170	SUZUKI (J)	Japan	7102	JS1	L3e	D	600	WVAJ	GSX600F	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki N 717
e04	*92/61*	0171	SUZUKI (J)	Japan	7102	JS1	L3e	D	750	WVAK	GSX750F	Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki
e04	*92/61*	0191	Suzuki (J)	Japan		JS1	L3e	D	996	WVBX		Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki T508,509,510
e04	*92/61*	0193	Suzuki (J)	Japan		JS1	L3e	D	988	WVBZ		Suzuki Motor Co.Ltd., 300 Takatsuka, J-43201 Hamamatsu	Suzuki T711,712
e01	*92/61*	0029	yamaha (J)	Japan	7101	JYA	L3e	D	1602	VP08		Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha

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e01	*92/61*	0063	yamaha (J)	Japan	7101	JYA	L3e	D	998	RN04		Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha
e01	*92/61*	0072	yamaha (J)	Japan	7101	JYA	L3e	D	1063	VP05		Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha
e01	*92/61*	0103	yamaha (J)	Japan	7101	JYA	L3e	D	998	RN06		Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha
e01	*92/61*	0107	yamaha (J)	Japan	7101	JYA	L3e	D	426	CJ	WR 426 F	Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha
e01	*92/61*	0134	YAMAHA (J)	Japan	7101	JYA	L3e	D	125	RP06		Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha
e13	*92/61*	0040	YAMAHA (J)	Japan	7101	JYA	L3e	D	499	SJ01		Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha
e13	*92/61*	0045	YAMAHA (J)	Japan	7101	JYA	L3e	D	1298	RP04		Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha
e13	*92/61*	0053	YAMAHA (J)	Japan	7101	JYA	L3e	D	897	RN08		Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha
e13	*92/61*	0054	YAMAHA (J)	Japan	7101	JYA	L3e	D	998	RN09		Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha N507E
e13	*92/61*	0059	YAMAHA (J)	Japan	7101	JYA	L3e	D	1063	VP16		Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha P612E
e13	*92/61*	0060	YAMAHA (J)	Japan	7101	JYA	L3e	D	600	RJ05		Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha J505E
e13	*92/61*	0062	YAMAHA (J)	Japan	7101	JYA	L3e	D	1298	RP08		Yamaha Motor Co. Ltd., J-2500 Shinghai Iwata, Shizuoka	Yamaha P507E
e04	*92/61*	0094	BRITTIJN IMPORT (NL)	NL	901	XL9	L1e	A	30	E	Duo-Met	Brittijn Import B.V., NL - 6545 AG Nijmegen	Morini Franco, Sachs, 301A
e04	*92/61*	0095	GLIDER EUROPE (NL)	NL	901	-	L1e	A	Elektro	GLIDER	Badsey Glider (Tretroller mit Sitz)	Glider Europe B.V., De Neerheide 12 b, 5581 TB Waalre The Netherlands	Badsey Electric
e12	*92/61*	0010	TOMOS (NL)	NL	9735	XML	L1e	A	49	A2	25/45 km/h (5D/5B)	Tomos Nederland Trading Company B.V., Kweekweg 34, NL- 8161 PG, Epe	Tomos, SLO-6000 Koper (Slovenija) Type 5B/5D
e12	*92/61*	0011	TOMOS (NL)	NL	9735	XML	L1e	A	49	A3	25/45 km/h (5D/5B)	Tomos Nederland Trading Company B.V., Kweekweg 34, NL- 8161 PG, Epe	Tomos, SLO-6000 Koper (Slovenija) Type 5B/5D
e01	*92/61*	0159	HERENWAL (NL)	NL	9757	XL9	L2e	entfällt	49	Scooter-Trike-BM	Big Max/ PMX	Herenwal Service,NL-8465 PL Oudehaske	Motive Power Industry,Taiwan (ROC)
e01	*92/61*	0160	HERENWAL (NL)	NL	9757	XL9	L2e	entfällt	49	Scooter-Trike-TR	T-Rex/ T-Rex Stuhl	Herenwal Service,NL-8465 PL Oudehaske	Motive Power Industry,Taiwan (ROC) Type PGP/P2
e04	*92/61*	0096	TRIGGER (NL)	NL	900	XL9	L2e	entfällt	49,3	50 MK I	Dreiradfahrzeug (v:2;hi:1) Trigger 50	Trigger Technics B.V., 2312 SN-Leiden, The Netherlands	TGB Taiwan Golden Bee GA5
e04	*92/61*	0175	VANDENBRINK (NL)	NL	901	XL9	L5e	entfällt	660	CARVER	Dreirad-Fz. (50,6KW)	VandenBrink B.V., Viltweg 1a, NL-3295 KT ´s-Gravendeel, The Netherland	Daihatsu JB-JL
e04	*92/61*	0088	WAAIJENBERG (NL)	NL	901	XL9	L6e	entfällt	315	LX	Canta (Klein-PKW/Invaliden-Fz.) (4KW) (425 kg m. F.)	WAAIJENBERG B.V, Wiltonstraat 26, 3905 KW Veenendaal, The Netherland	Lombardini 15LD315
e04	*92/61*	0059	WAAIJENBERG (NL)	NL	901	XL9	L7e	entfällt	337	LX	Canta (Klein-PKW) (465 kg m. F.) (6,8 KW)	WAAIJENBERG B.V, Wiltonstraat 26, 3905 KW Veenendaal, The Netherland	Honda GX340
e03	*92/61*	0152	MELEX (PL)	PL	901	SXM	L7e	entfällt	36V	C	leichtes Vierrad-Fz. (Elektro)	Melex Vehicles, 39-300 Mielec (Polonia)	Balkancar, BULGARIA
e09	*92/61*	0070	CARVALHO (P)	Portugal	901	TY4	L2e	entfällt	49	320	SOCA 320 (3-wheel)	Alberto CARVALHO Araujo & C. Lda., Lugar de Villa Nova - Nogueira, P-4710 Braga (Portugal)	Morini Franco Motori S.p.A., AH50L
e04	*92/61*	0036	C.P.I. MOTOR (RC)	ROC	7463	RFT	L1e	A	49	JP	JP	CPI Motor Co., No.76 Kung Yeh RD, Tai-Li City Taichung, Taiwan China	CPI 61 C

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e04	*92/61*	0064	C.P.I. MOTOR (RC)	ROC	7463	RFT	L1e	A	49	JR	JR	CPI Motor Co., No.76 Kung Yeh RD, Tai-Li City Taichung, Taiwan China	CPI
e04	*92/61*	0065	C.P.I. MOTOR (RC)	ROC	7463	RFT	L1e	A	49	JT		CPI Motor Co., No.76 Kung Yeh RD, Tai-Li City Taichung, Taiwan China	CPI
e04	*92/61*	0076	C.P.I. MOTOR (RC)	ROC	7463	RFT	L1e	A	49	JU		CPI Motor Co., No.76 Kung Yeh RD, Tai-Li City Taichung, Taiwan China	CPI
e04	*92/61*	0091	C.P.I. MOTOR (RC)	ROC	7463	RFT	L1e	A	49	JX		CPI Motor Co., No.76 Kung Yeh RD, Tai-Li City Taichung, Taiwan China	CPI 61A
e04	*92/61*	0118	C.P.I. MOTOR (RC)	ROC	7463	RFT	L1e	A	49	JM		CPI Motor Co., No.76 Kung Yeh RD, Tai-Li City Taichung, Taiwan China	CPI
e04	*92/61*	0015	CHUN LAN (rc)	ROC	7460	LCL	L1e	A	49	CL50QT		Chun Lan Group, Kou Tai Road No. 68, Tai Zhou, Jiang Su Province, China	Chun Lan IE39FM
e04	*92/61*	0144	Huanan Motors	ROC		LE8	L1e	A	49	BS 49	Branson	Huanan Motors Industrial Co.Ltd., Minzheng Industrial Area, Lanhe Town, Panyu, Guangdong, 511480 P.R. China	Jiang Su Linhai Yamaha Motor Branson FY139
e04	*92/61*	0143	HUANAN MOTORS (RC)	ROC	901	LE8	L1e	A	49	BS49	BRANSON (Roller)	Huanan Motors Industrial Co.Ltd., Minzheng Industrial Area, Lanhe Town, Panyu, Guangdong, 511480 P.R. China	Branson
e04	*92/61*	0034	hyosung (ROK)	ROC	8254	KM4	L1e	A	49	SF-50		Hyosung Motors Division, Changwon Shi 77, Sungsan Dong, ROK-Süd-Korea	Hyosung
e04	*92/61*	0148	IDEATION (ROC)	ROC	901	RKG	L1e	A	24VDC	S125/S128 (EZ Rider)	EMX 1201S/ EMX1203S (Emaxi)	Ideation Co.Ltd., 112, Sec.1, Chung Cheng Road ,Shih Lin, Taipei/Taiwan	Taiwan UQM Electric
e04	*92/61*	0172	Jiangmen	ROC		LNG	L1e	A	49,5	HY50QT-3	Hongyi	Jiangman Gianto Motorcycle Co.Ltd., Yayao Town Heshan, Guangdong Province, P.R. China, Postcode 529724	Jiangman Hongyi 139QM
e09	*92/61*	0025	JINCHENG (RC)	ROC	901	LJC	L1e	A	49	JC50Q-8		Jincheng Corporation, 518 east Zhongshan Road, 210002 Nanjing (China)	Jincheng
e09	*92/61*	0048	JINCHENG (RC)	ROC	901	LJC	L1e	A	49	JC50Q-7		Jincheng Corporation, 518 east Zhongshan Road, 210002 Nanjing (China)	Jincheng
e09	*92/61*	0065	JINCHENG (RC)	ROC	901	LJC	L1e	A	49	JC50Q-5		Jincheng Corporation, 518 east Zhongshan Road, 210002 Nanjing (China)	Jincheng
e01	*92/61*	0045	Kwang Yang (RC)	ROC	7453	RFB	L1e	A	49	SD	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e01	*92/61*	0080	Kwang Yang (RC)	ROC	7453	RFB	L1e	A	49	SC10AS	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*92/61*	0013	Kwang Yang (RC)	ROC	7453	RFB	L1e	A	49	B1	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*92/61*	0074	Kwang Yang (RC)	ROC	7453	RFB	L1e	A	49	S1	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*92/61*	0103	Kwang Yang (RC)	ROC	7453	RFB	L1e	A	49	SF	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*92/61*	0104	Kwang Yang (RC)	ROC	7453	RFB	L1e	A	49	S2	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*92/61*	0112	Kwang Yang (RC)	ROC	7453	RFB	L1e	A	49	S6	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*92/61*	0126	Kwang Yang (RC)	ROC	7453	RFB	L1e	A	49	S8	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*2000/7*	0159	Kwang Yang (RC)	ROC	7453	RFB	L1e	A	49	T8	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*92/61*	0159	Kwang Yang (RC)	ROC		LC2	L1e	A	49,5	T8	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kymco SF10D

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e04	*92/61*	0119	QIANJIANG (RC)	ROC	901	LAW	L1e	A	49,2	QM		Qianjiang Group, Wanchang road, Wenling City, Zhejiang Province, China, P.C.: 317500	QIANJIANG 61C
e04	*92/61*	0120	QIANJIANG (RC)	ROC	901	LAW	L1e	A	49,2	QP	61C	Qianjiang Group, Wanchang road, Wenling City, Zhejiang Province, China, P.C.: 317500	QIANJIANG 61C
e04	*92/61*	0121	QIANJIANG (RC)	ROC	901	LAW	L1e	A	49,2	QR		Qianjiang Group, Wanchang road, Wenling City, Zhejiang Province, China, P.C.: 317500	C.P.I. / QIANJIANG
e01	*92/61*	0015	SAN yang (rc)	ROC	7455	RFG	L1e	A	49,4	G5J	Jet 50	San Yang Industry Co. Ltd., Taipei/Taiwan (R.O.C.)	San Yang
e01	*92/61*	0028	SAN yang (rc)	ROC	7455	RFG	L1e	A	49,4	GA05W	SYM Jungle 50	San Yang Industry Co. Ltd., Taipei/Taiwan (R.O.C.)	San Yang
e01	*92/61*	0033	SAN yang (rc)	ROC	7455	RFG	L1e	A	49	G5H-6	Super Fancy	San Yang Industry Co. Ltd., Taipei/Taiwan (R.O.C.)	San Yang
e01	*92/61*	0078	SAN yang (rc)	ROC	7455	RFG	L1e	A	49,4	BS05W	SYM SHARK 50	San Yang Industry Co. Ltd., Taipei/Taiwan (R.O.C.)	San Yang
e01	*92/61*	0085	SAN yang (rc)	ROC	7455	RFG	L1e	A	49,4	BF05W	Mask 50	San Yang Industry Co. Ltd., Taipei/Taiwan (R.O.C.)	San Yang
e01	*92/61*	0127	SAN YANG (RC)	ROC	7455	RFG	L1e	A	49	FT05W		San Yang Industry Co. Ltd., Taipei/Taiwan (R.O.C.)	San Yang type ER
e04	*92/61*	0020	SAN yang (rc)	ROC	7455	RFG	L1e	A	49,5	HA05U1		San Yang Industry Co. Ltd., Taipei/Taiwan (R.O.C.)	San Yang Type:KM
e04	*92/61*	0081	SAN yang (rc)	ROC	7455	RFG	L1e	A	49,4	FA05U	SYM Fiddle 50	San Yang Industry Co. Ltd., Taipei/Taiwan (R.O.C.)	San Yang
e04	*92/61*	0023	shang wie ev (rc)	ROC	901	RF1	L1e	A	48Volt	SW2	SWAP SW2	Shang Wei EV Tech Inc., Chyan Jenn Dist., Kaohsiung Taiwan (R.O.C.)	Adlee Shang Wei SWM1LM
e09	*92/61*	0008	she lung (rc)	ROC	901	RFY	L1e	A	49,3	STAR 50		She Lung Electric Engineering Co. Ltd., 11 Lane 51, Chung Hsin St. 701, Tainan ,Taiwan (R.OC.)	She Lung
e09	*92/61*	0093	SKY TEAM (RC)	ROC	901	OOO	L1e	A	49	2	Prototyp	Sky team Co. Ltd., North Point- Hong Kong	JinCheng Co.
e01	*92/61*	0040	standard motor (rc)	ROC	7458	prototyp	L1e	A	49	N	(SMC)Kreidler Florett; Flory und div.and.	Standard Motor Co., Taipei/Taiwan (R.O.C)	standard
e01	*92/61*	0050	standard motor (rc)	ROC	7458	RFR	L1e	A	49	S	Kreidler Florett; SMC und div.and.	Standard Motor Co., Taipei/Taiwan (R.O.C)	standard
e01	*92/61*	0069	standard motor (rc)	ROC	7458	RFR	L1e	A	49	P	SMC Partner, Rex etc.	Standard Motor Co., Taipei/Taiwan (R.O.C)	standard
e01	*92/61*	0081	standard motor (rc)	ROC	7458	RFR	L1e	A	49	PM	SMC	Standard Motor Co., Taipei/Taiwan (R.O.C)	standard
e01	*92/61*	0083	standard motor (rc)	ROC	7458	RFR	L1e	A	49	NM	SMC	Standard Motor Co., Taipei/Taiwan (R.O.C)	standard
e01	*92/61*	0084	standard motor (rc)	ROC	7458	RFR	L1e	A	49	SM	SMC (SM-50)	Standard Motor Co., Taipei/Taiwan (R.O.C)	standard SM50
e04	*92/61*	0053	TAIW.GOLDEN BEE (RC)	ROC	7457	RFC	L1e	A	49	BR1		Taiwan Golden Bee Co. Ltd., No.15 Young-Kong, 2nd Road, Youn-An Industrial Park, Kaohsiung Hsien, Taiwan, R.O.C	Taiwan Golden Bee GH5
e04	*92/61*	0055	TAIW.GOLDEN BEE (RC)	ROC	7457	RFC	L1e	A	49	BH1		Taiwan Golden Bee Co. Ltd., No.15 Young-Kong, 2nd Road, Youn-An Industrial Park, Kaohsiung Hsien, Taiwan, R.O.C	Taiwan Golden Bee GH5
e04	*92/61*	0057	TAIW.GOLDEN BEE (RC)	ROC	7457	RFC	L1e	A	49	BK1		Taiwan Golden Bee Co. Ltd., No.15 Young-Kong, 2nd Road, Youn-An Industrial Park, Kaohsiung Hsien, Taiwan, R.O.C	Taiwan Golden Bee GH5
e04	*92/61*	0070	TAIW.GOLDEN BEE (RC)	ROC	7457	RFC	L1e	A	49	BF1		Taiwan Golden Bee Co. Ltd., No.15 Young-Kong, 2nd Road, Youn-An Industrial Park, Kaohsiung Hsien, Taiwan, R.O.C	Taiwan Golden Bee GH5
e04	*92/61*	0072	TAIW.GOLDEN BEE (RC)	ROC	7457	RFC	L1e	A	49	GE5		Taiwan Golden Bee Co. Ltd., No.15 Young-Kong, 2nd Road, Youn-An Industrial Park, Kaohsiung Hsien, Taiwan, R.O.C	Taiwan Golden Bee GH5

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e04	*92/61*	0073	TAIW.GOLDEN BEE (RC)	ROC	7457	RFC	L1e	A	49	GI5	45 und 25 km/h	Taiwan Golden Bee Co. Ltd., No.15 Young-Kong, 2nd Road, Youn-An Industrial Park, Kaohsiung Hsien, Taiwan, R.O.C	Taiwan Golden Bee GH5 /GI5
e04	*92/61*	0084	TAIW.GOLDEN BEE (RC)	ROC	7457	RFC	L1e	A	49	GI1	45 und 25 km/h	Taiwan Golden Bee Co. Ltd., No.15 Young-Kong, 2nd Road, Youn-An Industrial Park, Kaohsiung Hsien, Taiwan, R.O.C	Taiwan Golden Bee GH5
e04	*92/61*	0017	universal motor (RC)	ROC	901	RFU	L1e	A	49,3	46897	UVM (MORS A1-50)	Universal motor Co. Ltd., Kaohsiung Hsien ,Taiwan (R.O.K.)	UVM / Mors
e04	*92/61*	0137	XIN TIAN (RC)	ROC	901	LBX	L1e	A	49,5	XT50	two-wheel-moped	Jiangsu King Road XinTian Motorcycle Co. Ltd., Outang Town, Wuxi, Jiangsu Province, P.R. China Postcode: 214153	ChongQing Hua wei HW 139 FMB
e04	*92/61*	0149	XIN TIAN (RC)	ROC	901	LBX	L1e	A	49,2	XT50QT-5	two-wheel-moped	Jiangsu King Road XinTian Motorcycle Co. Ltd., Outang Town, Wuxi, Jiangsu Province, P.R. China Postcode: 214153	Da Dong IE40QMB
e04	*92/61*	0158	ZONGSHEN (RC)	ROC		LZS	L1e	A	48	ZS50Q-3	Zongshen Motoroma Zip Star	Chongqing Zongshen Motorcycle, Science & Technology Group Co.Ltd., Banan District,Congqing China	Zong Shen ZS139FMB
e04	*92/61*	0019	CHUN LAN (rc)	ROC	7460	LCL	L3e	B	125	CL125-3	Chopper 125-3	Chun Lan Group, Kou Tai Road No. 68, Tai Zhou, Jiang Su Province, China	Chun Lan 244FM
e04	*92/61*	0058	CHUN LAN (RC)	ROC	7460	LCL	L3e	B	125	CL-125T	Executive, Mors	Chun Lan Group, Kou Tai Road No. 68, Tai Zhou, Jiang Su Province, China	Chun Lan 152M
e04	*92/61*	0021	hartfort ind. (RC)	ROC	901	RH9	L3e	B	125	Legion HD125L	Legion HD125L	Hartford Industrial Co.Ltd., No.6., 6th. Road, Industrial Area, Taichung,Taiwan ROC	Hartford CG 125
e04	*92/61*	0046	her chee (rc)	ROC	7461	RFL	L3e	B	95,6	TB-100	TB-100 I, II(JET); SS-100 I, II(CAT)	Her Chee Industrial Co. Ltd.,No.2 Yi-Kung Road, Yi-chau Industrial Area, Yi-Chu Hsiang, Chia - Yi Hsien , Taiwan	Her Chee (Adly)
e04	*92/61*	0123	her chee (rc)	ROC	7461	RFL	L3e	B	95,6	AT-100JT	JET/CAT 100-10/-13;Silver Fox;; Road Runner	Her Chee Industrial Co. Ltd.,No.2 Yi-Kung Road, Yi-chau Industrial Area, Yi-Chu Hsiang, Chia - Yi Hsien , Taiwan	Her Chee (Adly) JT100
e04	*92/61*	0093	HONGYI (RC)	ROC	901	LNG	L3e	B	124	HY150	Chopper	Nanchang Hongyi Motor,Industries Co. Ltd., Torch St., New and High Tech Industrial Development Zone, Nanchang, Jiangxi Provence, Peoples Republic of China, Postal Code 330029	Nanchang Hongyi
e04	*92/61*	0145	Huanan Motors	ROC		LE8	L3e	B	124	BM125 II	Branson	Huanan Motors Industrial Co.Ltd., Minzheng Industrial Area, Lanhe Town, Panyu, Guangdong, 511480 P.R. China	Branson FY244
e04	*92/61*	0146	Huanan Motors	ROC		LE8	L3e	B	124	BM125	Branson	Huanan Motors Industrial Co.Ltd., Minzheng Industrial Area, Lanhe Town, Panyu, Guangdong, 511480 P.R. China	Huanan Branson FY156
e04	*92/61*	0147	Huanan Motors	ROC		LE8	L3e	B	124	BS 125	Branson	Huanan Motors Industrial Co.Ltd., Minzheng Industrial Area, Lanhe Town, Panyu, Guangdong, 511480 P.R. China	Branson FY151
e04	*92/61*	0027	hyosung (ROK)	ROC	8254	KM4	L3e	B	124	GPS 125 Plus		Hyosung Motors Division, Changwon Shi 77, Sungsan Dong, ROK-Süd-Korea	Hyosung
e04	*92/61*	0032	hyosung (ROK)	ROC	8254	KM4	L3e	B	125	RX-125		Hyosung Motors Division, Changwon Shi 77, Sungsan Dong, ROK-Süd-Korea	Hyosung
e04	*92/61*	0079	hyosung (ROK)	ROC	8254	KM4	L3e	B	125	GV 125		Hyosung Motors Division, Changwon Shi 77, Sungsan Dong, ROK-Süd-Korea	Hyosung
e04	*92/61*	0179	HYOSUNG (ROK)	ROC	8254	KM4	L3e	B	125	RT-125	125	Hyosung Motors Division, Changwon Shi 77, Sungsan Dong, ROK-Süd-Korea	Hyosung

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e09	*92/61*	0069	HYOSUNG (ROK)	ROC	8254	KM4	L3e	B	110	FX-110M		Hyosung Motors Division, Changwon Shi 77, Sungsan Dong, ROK-Süd-Korea	Hyosung
e09	*92/61*	0080	HYOSUNG (ROK)	ROC	8254	KM4	L3e	B	125	MS1		Hyosung Motors Division, Changwon Shi 77, Sungsan Dong, ROK-Süd-Korea	Hyosung
e09	*92/61*	0017	Jincheng (RC)	ROC	901	LJC	L3e	B	97	JC100-7	150FM(D)A	Jincheng Corporation, 518 east Zhongshan Road, 210002 Nanjing (China)	Jincheng
e09	*92/61*	0066	JINCHENG (RC)	ROC	901	LJC	L3e	B	85	JC-6	JC70-6/JC90-6	Jincheng Corporation, 518 east Zhongshan Road, 210002 Nanjing (China)	Jincheng
e01	*92/61*	0079	Kwang Yang (RC)	ROC	7453	RFB	L3e	B	124	M2	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*92/61*	0048	Kwang Yang (RC)	ROC	7453	RFB	L3e	B	125	RF	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang / Keihin
e04	*92/61*	0078	Kwang Yang (RC)	ROC	7453	RFB	L3e	B	125	R1	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*2000/7*	0138	Kwang Yang (RC)	ROC	7453	RFB	L3e	B	120	B3	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*92/61*	0153	Kwang Yang (ROC)	ROC	901	LC2	L3e	B	125	CK125-2F	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e12	*92/61*	0006	MOTIVE POWER (RC)	ROC	901	RFV	L3e	B	124,9	CP1	P.G.O. CP1	Motive Power Industry Co. Ltd., Chang Hwa Hsien Taiwan, ROC	MPI
e12	*92/61*	0008	MOTIVE POWER (RC)	ROC	901	RFV	L3e	B	106	CP0	P.G.O. CP0	Motive Power Industry Co. Ltd., Chang Hwa Hsien Taiwan, ROC	MPI
e04	*92/61*	0154	ZHONGYU (RC)	ROC	901	LMF	L3e	B	109	ZY110-3		Jiangmen ZhongYu Motors, Guang Dong Provence, P.R. China, Postcode: 529000	Jiangmen ZY1P50 FMH
e04	*92/61*	0155	ZHONGYU (RC)	ROC	901	LMF	L3e	B	124,6	ZY125T-2		Jiangmen ZhongYu Motors, Guang Dong Provence, P.R. China, Postcode: 529000	Jiangmen ZY1P52 QMI
e04	*92/61*	0156	ZONGSHEN (RC)	ROC	901	LZS	L3e	B	106,7	ZS110-9	ZS110-9; GO-GO II; GoGo 110	Chongqing Zongshen Motorcycle, Science & Technology Group Co.Ltd., Banan District,Congqing China	Zong Shen ZS152 FMH
e04	*92/61*	0157	ZONGSHEN (RC)	ROC	901	LZS	L3e	B	124,4	ZS125T-7	ROADRUNNER 125	Chongqing Zongshen Motorcycle, Science & Technology Group Co.Ltd., Banan District,Congqing China	Zong Shen ZS1P52QMI-2
e01	*92/61*	0021	Kwang Yang (RC)	ROC	7453	RFB	L3e	B und C	.../150	AF	25A. Stryker 125; 30A. Stryker 150	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*92/61*	0038	Kwang Yang (RC)	ROC	7453	RFB	L3e	B und C	125 / 150	B2	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*92/61*	0047	Kwang Yang (RC)	ROC	7453	RFB	L3e	B und C	125 / 150	SL	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e13	*92/61*	0025	Kwang Yang (RC)	ROC	7453	RFB	L3e	B und C	125 / 150	S3	Kymco S3 (SH 25, SH 30)	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e11	*92/61*	0047	LINHAI GROUP (RC)	ROC	901	LL8	L3e	B und C	125/150/257	HW	5,6 / 7 / 12	Jiangsu LinHai Power Machinery Group Corp., No: 14 Taijiu Road,Taizhou City, Jiang Su China	Jiang Su LinHai
e04	*92/61*	0143	Kwang Yang (RC)	ROC		LC2	L3e	B und C	125/151	SH 25BB, 30BB	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kymco
e01	*92/61*	0110	SAN YANG (RC)	ROC	7455	RFG	L3e	B und C	124,6 / 150	LA15W	12A-KU/ 15A-KV	San Yang Industry Co. Ltd., Taipei/Taiwan (R.O.C.)	San Yang
e09	*92/61*	0020	she lung (rc)	ROC	901	RFY	L3e	B und C	125/150	SH	Shining 125N; 150N	She Lung Electric Engineering Co. Ltd., 11 Lane 51, Chung Hsin St. 701, Tainan ,Taiwan (R.OC.)	She Lung

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e04	*92/61*	0127	TAIW. GOLDEN BEE (RC)	ROC	7457	RFC	L3e	B und C	124/151	BK8		Taiwan Golden Bee Co. Ltd., No.15 Young-Kong, 2nd Road, Youn-An Industrial Park, Kaohsiung Hsien, Taiwan, R.O.C	Taiwan Golden Bee
e04	*92/61*	0097	hyosung (ROK)	ROC	8254	KM4	L3e	C	249	GV 250		Hyosung Motors Division, Changwon Shi 77, Sungsan Dong, ROK-Süd-Korea	Hyosung
e01	*92/61*	0135	Kwang Yang (RC)	ROC	7453	RFB	L3e	C	249/252	R2	20kw	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*92/61*	0092	Kwang Yang (RC)	ROC	7453	RFB	L3e	C	249	S7	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*92/61*	0110	Kwang Yang (RC)	ROC	7453	RFB	L3e	C	150	S5	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*92/61*	0125	Kwang Yang (RC)	ROC	7453	RFB	L3e	C	249	S4	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*2000/7*	0143	Kwang Yang (RC)	ROC	7453	RFB	L3e	C	-	SH	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*92/61*	0183	CPI	ROC		RFT	L6e	entfällt	95,6	JW 100	4-wheel	CPI Motor Co., No.76 Kung Yeh RD, Tai-Li City Taichung, Taiwan China	CPI
e03	*92/61*	0105	DIN-LI (RC)	ROC	901	RFW	L6e	entfällt	50	DL601-50	leichtes Vierradfz.	DINLI Metal Industrial Co. , 51, Industrial 9th. Road, Tali City Taichung 412 , Taiwan (R.O.C.)	Dinli 50
e04	*92/61*	0168	Kwang Yang (RC)	ROC	7453	RFB	L6e	entfällt	49,4	L2	Kymco L2 Vierrad (Otto)	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*92/61*	0173	MOTIVE POWER (RC)	ROC	901	RFV	L6e	entfällt	49	XR-50	PGO XR-50	Motive Power Industry Co. Ltd., Chang Hwa Hsien Taiwan, ROC	MPI
e01	*92/61*	0113	STANDARD MOTOR (RC)	ROC	7458	RFR	L6e	entfällt	49	RAM50	SKY, BLAST (4-RAD Leichtfz.)	Standard Motor Co., Taipei/Taiwan (R.O.C)	standard YA-50
e01	*92/61*	0168	STANDARD MOTOR (RC)	ROC	7458	RFR	L6e	entfällt	49	RAM 100	SKY; BLAST; SL (4-wheel)	Standard Motor Co., Taipei/Taiwan (R.O.C)	standard YA-100
e04	*92/61*	0129	UNILLI MOTOR (RC)	ROC	901	RKE	L6e	entfällt	49	AX-50	CX-50 (4-wheel)	Unilli Motor Co. Ltd., No. 426 Sec. 2, Tou-Yuan Road,Changhua County 521,Taiwan	Unilli 2AB
e03	*92/61*	0106	DIN-LI (RC)	ROC	901	RFW	L7e	entfällt	100	DL601-100	leichtes Vierradfz.	DINLI Metal Industrial Co. , 51, Industrial 9th. Road, Tali City Taichung 412 , Taiwan (R.O.C.)	Dinli 100
e04	*92/61*	0163	JI-EE INDUSTRY (ROC)	ROC	901	RFZ	L7e	entfällt	149,5	EXL-150	E-TON	Ji-EE Industry Co..Ltd., 498 sec.2, Bentianst, Tainan/Taiwan (R.O.C.)	E-TON V30J
e04	*92/61*	0169	Kwang Yang (RC)	ROC	7453	RFB	L7e	entfällt	124 / 151	L1	Kymco L1 Vierrad (Otto)	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e04	*92/61*	0174	MOTIVE POWER (RC)	ROC	901	RFV	L7e	entfällt	106,2	XR	PGO XR	Motive Power Industry Co. Ltd., Chang Hwa Hsien Taiwan, ROC	MPI
e01	-92/61-	0171	STANDARD MOTOR (RC)	ROC	7458	RFR	L7e	entfällt	124/149/164	RAM 150	SKY-1; SKY-2	Standard Motor Co., Taipei/Taiwan (R.O.C)	standard
e04	*92/61*	0141	unilli motor (rc)	ROC	901	RKE	L7e	entfällt	95,6	ax-100	4-wheel (F5)	Unilli Motor Co. Ltd., No. 426 Sec. 2, Tou-Yuan Road,Changhua County 521,Taiwan	Unilli 2AD
e04	*92/61*	0022	SAN yang (rc)	ROC	7455	RFG	L7e	entfällt	101,12	HA10V2	SYM (Vierrad) und Zweirad	San Yang Industry Co. Ltd., Taipei/Taiwan (R.O.C.)	San Yang KK
e01	*92/61*	0057	Kwang Yang (RC)	ROC	7453	RFB	-		-	M1	Kymco	Kymco - Kwang Yang Motor Co. Ltd., 35, Wan Hsing Street, Sanmin District, ROC-Kaohsiung	Kwang Yang
e11	*92/61*	0074	LINHAI GROUP (RC)	ROC	901	LL8	-		-	ATN	-	Jiangsu LinHai Power Machinery Group Corp., No. 14 Taijiu Road,Taizhou City, Jiang Su China	-
e09	*92/61*	0092	SKY TEAM (RC)	ROC (HK)	901	OOO	L3e	B	124	1	Prototyp	Sky team Co. Ltd., North Point- Hong Kong	SkyTeam
e09	*92/61*	0094	SKY TEAM (RC)	ROC (HK)	901	prototyp	L3e	B	85	3	Prototyp	Sky team Co. Ltd., North Point- Hong Kong	JinCheng Co.
e11	*92/61*	0023	DAELIM (ROK)	ROC (SK)	8257	KMY	L1e	A	49	GZ 50 GF		Daelim Motor Co. Ltd., 16-6, 2Ga, Phil-Dong, Chung-Ku, ROK-Seoul	Daelim Motor Co.Ltd.

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e11	*92/61*	0037	DAELIM (ROK)	ROC (SK)	8257	KMY	L1e	A	49,5	SE1		Daelim Motor Co. Ltd., 16-6, 2Ga, Phil-Dong, Chung-Ku, ROK-Seoul	Daelim Motor Co.Ltd.
e04	*92/61*	0033	hyosung (ROK)	ROC (SK)	8254	KM4	L1e	A	49	SD-50		Hyosung Motors Division, Changwon Shi 77, Sungsan Dong, ROK-Süd-Korea	Hyosung
e11	*92/61*	0016	DAELIM (ROK)	ROC (SK)	8257	KMY	L3e	B	125	VL 125 F		Daelim Motor Co. Ltd., 16-6, 2Ga, Phil-Dong, Chung-Ku, ROK-Seoul	Daelim Motor Co.Ltd.
e11	*92/61*	0017	DAELIM (ROK)	ROC (SK)	8257	KMY	L3e	B	125	SG 125 F		Daelim Motor Co. Ltd., 16-6, 2Ga, Phil-Dong, Chung-Ku, ROK-Seoul	Daelim Motor Co.Ltd.
e11	*92/61*	0019	DAELIM (ROK)	ROC (SK)	8257	KMY	L3e	B	100	SH 100 F		Daelim Motor Co. Ltd., 16-6, 2Ga, Phil-Dong, Chung-Ku, ROK-Seoul	Daelim Motor Co.Ltd.
e11	*92/61*	0046	DAELIM (ROK)	ROC (SK)	8257	KMY	L3e	B	125	SA2		Daelim Motor Co. Ltd., 16-6, 2Ga, Phil-Dong, Chung-Ku, ROK-Seoul	Daelim Motor Co.Ltd.
e09	*92/61*	0114	Hyosung	ROC (SK)		KM4	L3e	B und C	124/249	GT 125 / GT 250		Hyosung Motors Division, Changwon Shi 77, Sungsan Dong, ROK-Süd-Korea	Hyosung
e01	*92/61*	0071	AEON MOTOR (RC)	ROC (TW)	7464	RF3	L1e	A	50	AM	Krypton	Aeon Motor Co. Ltd., Tainan/Taiwan, R.O.C.	Aeon AM50
e04	*92/61*	0035	AEON MOTOR (RC)	ROC (TW)	7464	RF3	L1e	A	50	AM01	AEON Krypton	Aeon Motor Co. Ltd., Tainan/Taiwan, R.O.C.	AEON
e04	*92/61*	**0052**	AEON MOTOR (RC)	ROC (TW)	7464	RF3	L1e	A	50	AR-03	Regal; Torch; TRX-50	Aeon Motor Co. Ltd., Tainan/Taiwan, R.O.C.	AEON
e04	*92/61*	**0050**	AEON MOTOR (RC)	ROC (TW)	7464	RF3	L1e	A	50	AE-06	ECHO - 50	Aeon Motor Co. Ltd., Tainan/Taiwan, R.O.C.	AEON
e04	*92/61*	0077	CPI	ROC (TW)		RFT	L1e	A	49,2	JV	CPI or LT Motor Company (2-wheel moped)	CPI Motor Co., No.76 Kung Yeh RD, Tai-Li City Taichung, Taiwan China	CPI
e01	*92/61*	0148	CURRIE TECH. (ROC)	ROC (TW)	7465	RKF	L1e	A	24Volt	ES	L-Mofa	CTI Currie Tecnologies International Ltd., 114 Taipei / Taiwan	CTI (USA) CTI 186-1
e04	*92/61*	0128	E-TON DYNAMICS (RC)	ROC (TW)	901	RFZ	L1e	A	49	DXL50	TORNADO DXL 50 (4-Rad-Fz)	E-TON DYNAMICS Tech. Industry Co. Ltd., 498, sec.2, Baentianst, Tainan Hsien, Taiwan (R.O.C.)	E-TON
e04	*92/61*	0111	EVT	ROC (TW)	901	RF8	L1e	A	48V	EVT-4000E	Elektro-Roller	EVT Technology Co. Ltd., 66 Hwa-Ya 1 Road, Hwa-Ya Technical Park, Kuei -Shan Hsiang, Tao Yuan Hsien, Taiwan R.O.C.	EVT (Syx 206 4150 LZ)
e04	*92/61*	0150	EVT (RC)	ROC (TW)	901	RF8	L1e	A	48V	EVT-168	Elektro-Roller	EVT Technology Co. Ltd., 66 Hwa-Ya 1 Road, Hwa-Ya Technical Park, Kuei -Shan Hsiang, Tao Yuan Hsien, Taiwan R.O.C.	EVT (Syx 206 4150 LZ)
e04	*92/61*	0181	He Cheng	ROC (TW)		RKU	L1e	A	24Volt	HCF 735	HCF	He Cheng Fa Enterprise Co. Ltd., No.108 Tai-Tz rd.,Ren-De Shiang, Tainan, Taiwan	King Right Motor MB 160 Outline
e04	*92/61*	0037	her chee (rc)	ROC (TW)	7461	RFL	L1e	A	49,3	AT-50WB	Adly	Her Chee Industrial Co. Ltd.,No.2 Yi-Kung Road, Yi-chau Industrial Area, Yi-Chu Hsiang, Chia - Yi Hsien , Taiwan	Her Chee
e04	*92/61*	0039	her chee (rc)	ROC (TW)	7461	RFL	L1e	A	49	PP 50	FP 50	Her Chee Industrial Co. Ltd.,No.2 Yi-Kung Road, Yi-chau Industrial Area, Yi-Chu Hsiang, Chia - Yi Hsien , Taiwan	Her Chee (Adly)
e04	*92/61*	0040	her chee (rc)	ROC (TW)	7461	RFL	L1e	A	49	PT-50A	PT-50I, II; FX-50I, II	Her Chee Industrial Co. Ltd.,No.2 Yi-Kung Road, Yi-chau Industrial Area, Yi-Chu Hsiang, Chia - Yi Hsien , Taiwan	Her Chee (Adly)
e04	*92/61*	0044	her chee (rc)	ROC (TW)	7461	RFL	L1e	A	49	TB 50	TB 50 I, II; SS 50 I; II	Her Chee Industrial Co. Ltd.,No.2 Yi-Kung Road, Yi-chau Industrial Area, Yi-Chu Hsiang, Chia - Yi Hsien , Taiwan	Her Chee (Adly)
e04	*92/61*	0045	her chee (rc)	ROC (TW)	7461	RFL	L1e	A	49,3	AT 50 JT	Jet 50; Cat 50; Silver Fox 50	Her Chee Industrial Co. Ltd.,No.2 Yi-Kung Road, Yi-chau Industrial Area, Yi-Chu Hsiang, Chia - Yi Hsien , Taiwan	Her Chee (Adly)
e04	*92/61*	0124	her chee (rc)	ROC (TW)	7461	RFL	L1e	A	49,3	RT-50	RT-50 I, II	Her Chee Industrial Co. Ltd.,No.2 Yi-Kung Road, Yi-chau Industrial Area, Yi-Chu Hsiang, Chia - Yi Hsien , Taiwan	Her Chee (Adly)

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e04	*92/61*	0178	MOTIVE POWER (RC)	ROC (TW)	901	RFV	L1e	A	49	TR3-50	PGO XR-50	Motive Power Industry Co. Ltd., Chang Hwa Hsien Taiwan, ROC	MPI
e12	*92/61*	0005	MOTIVE POWER (RC)	ROC (TW)	901	RFV	L1e	A	49	PM, P2	P.G.O. PM	Motive Power Industry Co. Ltd., Chang Hwa Hsien Taiwan, ROC	MPI
e12	*92/61*	0007	MOTIVE POWER (RC)	ROC (TW)	901	RFV	L1e	A	49	CP	P.G.O. CP	Motive Power Industry Co. Ltd., Chang Hwa Hsien Taiwan, ROC	MPI
e04	*92/61*	0182	CPI	ROC (TW)		RFT	L6e	A	49,2	JW 50	4-wheel	CPI Motor Co., No.76 Kung Yeh RD, Tai-Li City Taichung, Taiwan China	CPI 61G
e04	*92/61*	0051	AEON MOTOR (RC)	ROC (TW)	7464	RF3	L3e	B	125	AE	Pulsar	Aeon Motor Co. Ltd., Tainan/Taiwan, R.O.C.	AEON
e04	*92/61*	0069	AEON MOTOR (RC)	ROC (TW)	7464	RF3	L3e	B	95,6	AM 02		Aeon Motor Co. An-Ho Road, sec.2, No.40, Lane 54 Tainan Taiwan	Aeon AM-100
e01	*92/61*	0016	SAN yang (rc)	ROC (TW)	7455	RFG	L3e	B	124,6	N125A-6	Husky 125	San Yang Industry Co. Ltd., Taipei/Taiwan (R.O.C.)	San Yang
e01	*92/61*	0017	SAN yang (rc)	ROC (TW)	7455	RFG	L3e	B	124,6	H125D	Attila 125	San Yang Industry Co. Ltd., Taipei/Taiwan (R.O.C.)	San Yang
e01	*92/61*	0024	SAN yang (rc)	ROC (TW)	7455	RFG	L3e	B	124,6	A125 Q2-2	SYM Super Duke 125	San Yang Industry Co. Ltd., Taipei/Taiwan (R.O.C.)	Sang Yang
e01	*92/61*	0036	SAN yang (rc)	ROC (TW)	7455	RFG	L3e	B	101	G100P	SYM G100P	San Yang Industry Co. Ltd., Taipei/Taiwan (R.O.C.)	San Yang Type:KG
e01	*92/61*	0038	SAN yang (rc)	ROC (TW)	7455	RFG	L3e	B	125	HS12W		San Yang Industry Co. Ltd., Taipei/Taiwan (R.O.C.)	San Yang KS
e01	*92/61*	0120	SAN YANG (RC)	ROC (TW)	7455	RFG	L3e	B	124,6	AK12W		San Yang Industry Co. Ltd., Taipei/Taiwan (R.O.C.)	San Yang Type:KP
e01	*92/61*	0035	standard motor (rc)	ROC (TW)	7458	RFR	L3e	B	124	R0A	SMC Roadster; Cruiser; Capriolo	Standard Motor Co., Taipei/Taiwan (R.O.C)	standard CG-125
e01	*92/61*	0053	standard motor (rc)	ROC (TW)	7458	RFR	L3e	B	124	CHP	Kreidler Mustang; SMC u. div.and.	Standard Motor Co., Taipei/Taiwan (R.O.C)	standard CG-125
e04	*92/61*	0054	TAIW.GOLDEN BEE (RC)	ROC (TW)	7457	RFC	L3e	B	124	BR8		Taiwan Golden Bee Co. Ltd., No.15 Young-Kong, 2nd Road, Youn-An Industrial Park, Kaohsiung Hsien, Taiwan, R.O.C	Taiwan Golden Bee
e04	*92/61*	0056	TAIW.GOLDEN BEE (RC)	ROC (TW)	7457	RFC	L3e	B	124	BH8		Taiwan Golden Bee Co. Ltd., No.15 Young-Kong, 2nd Road, Youn-An Industrial Park, Kaohsiung Hsien, Taiwan, R.O.C	Taiwan Golden Bee GA8
e04	*92/61*	0071	TAIW.GOLDEN BEE (RC)	ROC (TW)	7457	RFC	L3e	B	124	BF8		Taiwan Golden Bee Co. Ltd., No.15 Young-Kong, 2nd Road, Youn-An Industrial Park, Kaohsiung Hsien, Taiwan, R.O.C	Taiwan Golden Bee GL8
e13	*92/61*	0006	YAMAHA (RC)	ROC (TW)	7452	LPR	L3e	B	101	SB02		Yamaha Taiwan	Yamaha B103E (Taiwan)
e13	*92/61*	0021	YAMAHA (RC)	ROC (TW)	7452	LPR	L3e	B	125	SE03	MBK (SE032), Yamaha (SE031)	Yamaha Taiwan	Yamaha E310E Taiwan
e04	*92/61*	0166	REINMECH (RC)	ROC (TW)	901	RKO	L7e	B	124	MT-125H	4-wheel, 243 kg mit Fahrer	Reinmech Corporation, 5-3 Fu-Mei Road Tay-An, Hou-Li, Taichung (Taiwan)	Reinmech GY6
e04	*92/61*	0041	her chee (rc)	ROC (TW)	7461	RFL	L3e	B und C	124	TB 125	TB 125D/B; SS 125D/B	Her Chee Industrial Co. Ltd.,No.2 Yi-Kung Road, Yi-chau Industrial Area, Yi-Chu Hsiang, Chia - Yi Hsien , Taiwan	Her Chee (Adly)
e04	*92/61*	0075	MOTIVE POWER (RC)	ROC (TW)	901	RFV	L3e	C	147	CP2	PGO CP2,C5	Motive Power Industry Co. Ltd., Chang Hwa Hsien Taiwan, ROC	MPI
e04	*92/61*	0186	Her Chee	ROC (TW)		RFL	L6e	entfällt	96	ATV-100 (4-wheel)	4,3 kw 186 kg m.F.	Her Chee Industrial Co. Ltd.,No.2 Yi-Kung Road, Yi-chau Industrial Area, Yi-Chu Hsiang, Chia - Yi Hsien , Taiwan	Her Chee JA100 Petrol
e04	*92/61*	0087	Her Chee	ROC (TW)		RFL	L6e	entfällt	49	ATV-50 (4-wheel) (2,78 kw)	178 kg mit Fahrer	Her Chee Industrial Co. Ltd.,No.2 Yi-Kung Road, Yi-chau Industrial Area, Yi-Chu Hsiang, Chia - Yi Hsien , Taiwan	Her Chee Adly JA50 Petrol
e03	*92/61*	0060	AEON MOTOR (RC)	ROC (TW)	7464	RF3	L6e oder L7e	entfällt	???	AT	leichtes Vierradfz. (Quad)	Aeon Motor Co. Ltd., Tainan/Taiwan, R.O.C.	-

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e01	*2000/7*	0150	IRBIT (RU)	RU	9330	0	L3e	D	745	IMZ-8.1037	mit Beiwagen	Irbit Motorcycle Plant, 623851 Irbit /Russland	Russia Irbit Plant
e01	*92/61*	0166	IRBIT (RU)	RU	9330	0	L3e	D	745	IMZ-8.123		Irbit Motorcycle Plant, 623851 Irbit /Russland	Russia Irbit Plant
e01	*92/61*	0167	IRBIT (RU)	RU	9330	0	L3e	D	745	IMZ-8.1238		Irbit Motorcycle Plant, 623851 Irbit /Russland	Russia Irbit Plant
e05	*92/61*	0001	husaberg motor (s)	Schweden	901	Schweden	L3e	C und D	399/501/...	FE	Husaberg 400; 501; 600	Husaberg Motor AB, Endurovägen, SE-695 72 Röfors	Husaberg
e11	*2000/7*	0069	MANET (SK)	SK	901	U7V	L1e	A	49	216	KORADO two-wheel	Manet a.s, .Dobrovicova 8, 811 09 Bratislava, Slovak Republic	Manet Super Maxi
e12	*92/61*	0012	TOMOS (SLO)	SLO	901	ZZ1	L1e	A	49	A2	25/45 km/h (5D/5B)	Tomos, SLO-6000 Koper (Slovenija)	Tomos, SLO-6000 Koper (Slovenija) Type 5B/5D
e12	*92/61*	0013	TOMOS (SLO)	SLO	901	ZZ1	L1e	A	49	A3	25/45 km/h (5D/5B)	Tomos, SLO-6000 Koper (Slovenija)	Tomos, SLO-6000 Koper (Slovenija) Type 5B/5D
e09	*92/61*	0099	BETA TRUEBA (E)	Spanien	901	VTS	L1e	A	50	ART		Beta Trueba S.L,. Ctra.N-II km 578,6 Pol. Ind. Can Comelles, Zona Sur - 08292 Esparraguera (Barcelona) Espana	Minarelli AM6
e09	*92/61*	0113	BETA TRUEBA (E)	Spanien	901	VTS	L1e	A	50	RRT		Beta Trueba S.L,. Ctra.N-II km 578,6 Pol. Ind. Can Comelles, Zona Sur - 08292 Esparraguera (Barcelona) Espana	Minarelli AM6
e03	*92/61*	0099	CARAL FACTORY (E)	Spanien	901	VTW	L1e	A	49,7	DESERT YR50	CHRONO SM 50	CARAL FACTORY S.L., Francese Vila 11, 08190 Sant Cugat del Valles (BCN) Espana	Minarelli
e09	*92/61*	0038	G.H.E. (E)	Spanien	901	VTV	L1e	A	49	DR 01	Racing RX (Motorhispania)	GHE Motorhispania S.L., Pol. Ind. La Chaparrilla 31-32, E- 41016 Sevilla	Minarelli AM6
e09	*92/61*	0110	G.H.E. (E)	Spanien	901	VTV	L1e	A	49	DV0C	RYZ	GHE Motorhispania S.L., Pol. Ind. La Chaparrilla 31-32, E- 41016 Sevilla	Minarelli AM6 (EU 1)
e09	*92/61*	0044	GAS GAS MOTOS (E)	Spanien	901	VTR	L1e	A	50	EC05		Gas Gas motos S.A., E-17458 Fornells de la Selva	Gas Gas EC05
e09	*92/61*	0050	GEACÉ CICLOS (E)	Spanien	901	VT2	L1e	A	49	6	MOTOGAC	GEACÉ CICLOS (E) Barrio Lebario, E -48220 Abadino (Vizcaya) Spain	Geace AV7
e09	*92/61*	0096	MOTORHISPANIA (E)	Spanien	901	VTV	L1e	A	49,7	FU0C	Furia Cross E1	G.H.E. Motorhispania S.L.Pol. Ind. La Chaparrilla 31-32, E-41016 Sevilla	Motori Minarelli AM6
e09	*92/61*	0104	Nacional motor (e)	Spanien		VTH	L1e	A	49	GP	Derbi	Nacional Motor S.A., Barcelona 19, 08107 Martorelles (Barcelona) Spain	Piaggio C321M
e09	*92/61*	0014	Nacional motor (e)	Spanien	7611	VTH	L1e	A	49	ATL	Atlantis (Derbi)	Nacional Motor S.A., Barcelona 19, 08107 Martorelles (Barcelona) Spain	National Motor (Derbi)
e09	*92/61*	0027	Nacional motor (e)	Spanien	7611	VTH	L1e	A	49	SDR	Derbi / Bultaco	Nacional Motor S.A., Barcelona 19, 08107 Martorelles (Barcelona) Spain	National Motor (Derbi) EBS050
e09	*92/61*	0032	Nacional motor (e)	Spanien	7611	VTH	L1e	A	49	SEND	Derbi / Bultaco	Nacional Motor S.A., Barcelona 19, 08107 Martorelles (Barcelona) Spain	National Motor (Derbi) EBS050
e09	*92/61*	0033	Nacional motor (e)	Spanien	7611	VTH	L1e	A	49	PRED	Derbi / Bultaco	Nacional Motor S.A., Barcelona 19, 08107 Martorelles (Barcelona) Spain	National Motor (Derbi) EBS050
e09	*92/61*	0052	Nacional motor (e)	Spanien	7611	VTH	L1e	A	49	GPRR	Derbi /Bultaco GPR 50R	Nacional Motor S.A., Barcelona 19, 08107 Martorelles (Barcelona) Spain	National Motor (Derbi) EBS050
e09	*92/61*	0087	NACIONAL MOTOR (E)	Spanien	7611	VTH	L1e	A	49	AL	Derbi	Nacional Motor S.A., Barcelona 19, 08107 Martorelles (Barcelona) Spain	Piaggio C215M
e09	*92/61*	0089	NACIONAL MOTOR (E)	Spanien	7611	VTH	L1e	A	49,89	VR	Start/Classic/Courier/Sport7Revolution/ La Poste	Nacional Motor S.A., Barcelona 19, 08107 Martorelles (Barcelona) Spain	National Motor (Derbi) EVE050E
e09	*92/61*	0022	PIAGGIO (E)	Spanien	901	VTB	L1e	A	49,9	C08	Gilera 50	Piaggio Espana S.A., Julian Camarillo 6 - 28037 Madrid	Franco Morini Gilera
e09	*92/61*	0024	PIAGGIO (E)	Spanien	901	VTB	L1e	A	49,8	C23		Piaggio Espana S.A., Julian Camarillo 6 - 28037 Madrid	Piaggio Espana
e09	*92/61*	0061	PIAGGIO (E)	Spanien	901	VTB	L1e	A	49	C33	Gilera 50	Piaggio Espana S.A., Julian Camarillo 6 - 28037 Madrid	Nacional

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e09	*92/61*	0039	RIEJU (E)	Spanien	7508	VTP	L1e	A	49,7	RR		Rieju S.A.; Borrassa, 41; 17600 Figueras (Girona)	Minarelli AM6
e09	*92/61*	0040	RIEJU (E)	Spanien	7508	VTP	L1e	A	49	RSE		Rieju S.A.; Borrassa, 41; 17600 Figueras (Girona)	Minarelli AM6
e09	*92/61*	0074	RIEJU (E)	Spanien	7508	VTP	L1e	A	49,7	MRX		Rieju S.A.; Borrassa, 41; 17600 Figueras (Girona)	Minarelli AM6
e11	*2000/7*	0068	rieju (e)	Spanien	7508	VTP	L1e	A	50	RS2		Rieju S.A.; Borrassa, 41; 17600 Figueras (Girona)	Minarelli
e09	*92/61*	0023	suzuki (E)	Spanien	7610	VTT	L1e	A	49	BA	UF50; UF50Z	Suzuki Motor Espana ,S.A., Poligono Industrial de porceyo S/N, E-33392 Gijon Asturias	Suzuki A1A1
e09	*92/61*	0100	SUZUKI (E)	Spanien	7610	VTT	L1e	A	49	WVAA	AY50/ AY50WR	Suzuki Motor Espana ,S.A., Poligono Industrial de porceyo S/N, E-33392 Gijon Asturias	Suzuki
e09	*92/61*	0042	YAMAHA (E)	Spanien	7501	VTL	L1e	A	49	SA15	Yamaha/ MBK	Yamaha Motor Espana S.A., C/ Aiguaders,10-16, Pol. Ind., "Riera de Caldes", E-08184 Palau de Plegamans, Barcelona	Minarelli A124E
e09	*92/61*	0060	YAMAHA (E)	Spanien	7501	VTL	L1e	A	49,2	SA19	YN50 - Mofa	Yamaha Motor Espana S.A., C/ Aiguaders,10-16, Pol. Ind., "Riera de Caldes", E-08184 Palau de Plegamans, Barcelona	Minarelli A128E
e09	*92/61*	0097	YAMAHA (E)	Spanien	7501	VTL	L1e	A	49	SA21		Yamaha Motor Espana S.A., C/ Aiguaders,10-16, Pol. Ind., "Riera de Caldes", E-08184 Palau de Plegamans, Barcelona	Minarelli A130E
e09	*92/61*	0062	GAS GAS MOTOS (E)	Spanien	901	VTR	L3e	B	125	EC	EC12	Gas Gas motos S.A., E-17458 Fornells de la Selva	Gas Gas
e09	*2000/7*	0083	GAs GAS MOTOS (E)	Spanien	901	VTR	L3e	B	125	GG??	TRIAL 120	Gas Gas motos S.A., E-17458 Fornells de la Selva	-
e09	*92/61*	0053	MONTESA HONDA (E)	Spanien	7607	VTM	L3e	B	125	JC32		Montesa Honda S.A., Calle del Mar del Nord,s.n., E-08130 Santa Perpètua de Mogoda (B)	Honda Montesa JC29E
e09	*92/61*	0049	Nacional motor (e)	Spanien	7611	VTH	L3e	B	84	AT	Derbi Atlantis 100	Nacional Motor S.A., Barcelona 19, 08107 Martorelles (Barcelona) Spain	National Motor (Derbi) EMR 100
e09	*92/61*	0106	RIEJU (E)	Spanien	7508	VTP	L3e	B	123	MR4T	MRX	Rieju S.A.; Borrassa, 41; 17600 Figueras (Girona)	Minarelli 5PA
e09	*2000/7*	0078	SUZUKI (E)	Spanien	7610	VTT	L3e	B	125	BP	UH125	Suzuki Motor Espana ,S.A., Poligono Industrial de porceyo S/N, E-33392 Gijon Asturias	Suzuki F442
e09	*92/61*	0102	SUZUKI (E)	Spanien	7610	VTT	L3e	B	125	AP	GZ125/ GZ125U	Suzuki Motor Espana ,S.A., Poligono Industrial de porceyo S/N, E-33392 Gijon Asturias	Suzuki F429 und F430
e09	*92/61*	0016	yamaha (E)	Spanien	7501	VTL	L3e	B	101	SB04	Yamaha/ MBK YN100	Yamaha Motor Espana S.A., C/ Aiguaders,10-16, Pol. Ind., "Riera de Caldes", E-08184 Palau de Plegamans, Barcelona	Yamaha Motor Taiwan B107E
e09	*92/61*	0046	YAMAHA (E)	Spanien	7501	VTL	L3e	B	124	SE06	Yamaha/ MBK	Yamaha Motor Espana S.A., C/ Aiguaders,10-16, Pol. Ind., "Riera de Caldes", E-08184 Palau de Plegamans, Barcelona	Minarelli E317E
e09	*92/61*	0043	MONTESA HONDA (E)	Spanien	7607	VTM	L3e	B und C	125	JC31		Montesa Honda S.A., Calle del Mar del Nord,s.n., E-08130 Santa Perpètua de Mogoda (B)	Honda Montesa JC29E
e09	*92/61*	0098	NACIONAL MOTOR (E)	Spanien	7611	VTH	L3e	B und C	125/150/151	BL	Derbi Boulevard	Nacional Motor S.A., Barcelona 19, 08107 Martorelles (Barcelona) Spain	Piaggio M211M, M212M,M213M
e09	*92/61*	0062	GAS GAS MOTOS (E)	Spanien	901	VTR	L3e	C	200, 250, 300	EC	EC20/EC25/EC30	Gas Gas motos S.A., E-17458 Fornells de la Selva	Gas Gas
e09	*2000/7*	0083	GAs GAS MOTOS (E)	Spanien	901	VTR	L3e	C	175, 248, 272	GG??	Trial 160,250,280	Gas Gas motos S.A., E-17458 Fornells de la Selva	-

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e09	*92/61*	0076	SUZUKI (E)	Spanien	7610	VTT	L3e	C	152	BR	UH150	Suzuki Motor Espana ,S.A., Poligono Industrial de porceyo S/N, E-33392 Gijon Asturias	Suzuki G414
e09	*92/61*	0101	SUZUKI (E)	Spanien	7610	VTT	L3e	C	249	AR	GZ250	Suzuki Motor Espana ,S.A., Poligono Industrial de porceyo S/N, E-33392 Gijon Asturias	Suzuki (J 430)
e09	*92/61*	0030	YAMAHA (E)	Spanien	7501	VTL	L3e	C	152	SG05	Yamaha/ MBK	Yamaha Motor Espana S.A., C/ Aiguaders,10-16, Pol. Ind., "Riera de Caldes", E-08184 Palau de Plegamans, Barcelona	Minarelli G317E
e09	*92/61*	0047	YAMAHA (E)	Spanien	7501	VTL	L3e	C	152	SG08	Yamaha/ MBK	Yamaha Motor Espana S.A., C/ Aiguaders,10-16, Pol. Ind., "Riera de Caldes", E-08184 Palau de Plegamans, Barcelona	Minarelli G323E
e09	*92/61*	0077	Honda Montesa	Spanien		VTM	L3e	C und D	647	RD 11			Honda RD10E
e09	*92/61*	0073	MONTESA HONDA (E)	Spanien	7607	VTM	L3e	C und D	647	RC47	NT650V	Montesa Honda S.A., Calle del Mar del Nord,s.n., E-08130 Santa Perpètua de Mogoda (B)	Montesa Honda
e09	*92/61*	0116	SUZUKI (E)	Spanien		VTT	L3e	C und D	487	BK	GS 500	Suzuki Motor Espana ,S.A., Poligono Industrial de porceyo S/N, E-33392 Gijon Asturias	Suzuki M501,502,504,506
e09	*2000/7*	0081	GAs GAS MOTOS (E)	Spanien	901	VTR	L3e	D	400	FS??	FS 400	Gas Gas motos S.A., E-17458 Fornells de la Selva	-
e09	*92/61*	0059	MONTESA HONDA (E)	Spanien	7607	VTM	L3e	D	996	SD02		Montesa Honda S.A., Calle del Mar del Nord,s.n., E-08130 Santa Perpètua de Mogoda (B)	Honda ltd. / Montesa Honda S.A.
e09	*92/61*	0091	MOVILIDAD Y AUTONOM.(E)	Spanien	901	VT9	L6e	entfällt	505	101	BUOMO (Klein PKW) (4kw) (440/450 kg mit Fahrer)	Movilidad, E-14940 Cabra (Cordoba)	Lombardini LDW 502
e09	*92/61*	0036	VEXEL (E)	Spanien	901	VTX	L7e	entfällt	400	V0	Klein-PKW (435 kg mit Fahrer) (3,85 KW)	VEXEL Extremenos Especiales Ligeros S.L., Ctra. de Caceres Km 84.6, Semillero de Empresas, 06006 Badajoz	Kubota Z402
e09	*92/61*	0108	VEXEL (E)	Spanien	901	VTX	L7e	entfällt	505	V2	Leichtes Vierradfz. (437 kg m. Fahrer)	VEXEL , 28002 Madrid	Lombardini LDW502
e09	*92/61*	0109	VEXEL (E)	Spanien	901	VTX	L7e	entfällt	505	V1	Leichtes Vierradfz. (477 kg m. Fahrer)	VEXEL , 28002 Madrid	Lombardini LDW502
e09	*2000/7*	0079	YAMAHA (E)	Spanien	7501	-	-		-	SA22		Yamaha Motor Espana S.A., C/ Aiguaders,10-16, Pol. Ind., "Riera de Caldes", E-08184 Palau de Plegamans, Barcelona	
e04	*92/61*	0122	HONDA (TR)	TR	5983	NMH	L3e	B	125	JC27		Honda Anadolu Motosiklet Uretim Ve Pazarlama A.S., TR-81420 Istanbul (Turkey)	Honda
e13	*92/61*	0063	Beldeyama	Türkei		NMY	L1e	A	49,9	MP01	MBK	Beldeyama A.S., 80860 Istanbul, Turkey	Beldeyama/MBK
e01	*92/61*	0027	Kombassan Kanuni MZ Motor	Türkei	5981	NMZ	L3e	B	124	080 000	VAN 12 Kanuni	Kombassan Kanuni MZ Motor, Instanbul, Turkei	Hartford, She Hong CG 125
e04	*92/61*	0140	RAMZEY (TR)	Türkei	901	NRZ	L2e	entfällt	49	Yankee	Dreirad (1,1 KW)	Ramzey Motorsiklet, Orhanli 81424 Tuzla Istanbul (Turkey)	Ramzey
e01	*92/61*	0006	BUELL (USA)	USA	1029	4MZ	L3e	D	1199	BL1	BL1	BUELL Motor Company Inc., 2815 Buell Drive, USA-53120 East Troy, WI	Harley Davidson, Milwaukee USA (Type: TS)
e04	*92/61*	0139	BUELL (USA)	USA	1029	4MZ	L3e	D	985	XB1	XB9R	BUELL Motor Company Inc., 2815 Buell Drive, USA-53120 East Troy, WI	Harley Davidson, Milwaukee USA
e04	*92/61*	0130	HARLEY DAVIDSON (USA)	USA	1008	1HD	L3e	D	1131	VR1		Harley-Davidson, Motorcycles Co. Inc., 3700 West Juneau Avenue, USA - 53208 Milwaukee, WI	Harley
e04	*92/61*	0002	harley-davidson (usa)	USA	1008	1HD	L3e	D	1449	FS2	FXS; FLS	Harley-Davidson, Motorcycles Co. Inc., 3700 West Juneau Avenue, USA - 53208 Milwaukee, WI	Harley

Land	Regel.	Nummer	Hersteller	LAND	HSN	WMI	Fahrzeug-klasse nach 2002/24/EG	Klasse nach 97/24/EG Kap. 7	Hub-raum	Typ	Handelsname	Herstelleradresse	Triebsatzhersteller
e04	*92/61*	0028	harley-davidson (usa)	USA	1008	1HD	L3e	D	1200	XL1	XL; XLH	Harley-Davidson, Motorcycles Co. Inc., 3700 West Juneau Avenue, USA - 53208 Milwaukee, WI	Harley
e04	*92/61*	0029	harley-davidson (usa)	USA	1008	1HD	L3e	D	1449	FD1	FXD	Harley-Davidson, Motorcycles Co. Inc., 3700 West Juneau Avenue, USA - 53208 Milwaukee, WI	Harley
e04	*92/61*	0030	harley-davidson (usa)	USA	1008	1HD	L3e	D	1449	FL1	FLH; FLT	Harley-Davidson, Motorcycles Co. Inc., 3700 West Juneau Avenue, USA - 53208 Milwaukee, WI	Harley
e04	*92/61*	0107	HONDA (USA)	USA	1153	1HF	L3e	D	1832	SC47		Honda of America Manufactoring, Honda Park Way, USA-Marysville/Ohio 43040	Honda of America Inc.
e04	*92/61*	0113	HONDA (USA)	USA	1153	1HF	L3e	D	1795	SC46		Honda of America Manufactoring, Honda Park Way, USA-Marysville/Ohio 43040	Honda of America Inc.
e04	*92/61*	0152	HONDA (USA)	USA	1153	1HF	L3e	D	1312	SC52		Honda of America Manufactoring, Honda Park Way, USA-Marysville/Ohio 43040	Honda of America Inc.
e04	*92/61*	0062	HONDA (USA)	USA	1153	1HF	L3e	D	1099	SC 43	Vt1110 C2	Honda of America Manufactoring, Honda Park Way, USA-Marysville/Ohio 43040	Honda of America Inc.
e13	*92/61*	0018	TITAN MOTORCYCLE(USA)	USA	901	5TM	L3e	D	1562	CUSTOM	Roadrunner, Gecko	Titan Motorcycle Co. Of America, 2222 West Peoria Ave, Phoenix, AZ 85029 USA	S& S Cycle, 54664 WI (USA)
e11	*92/61*	0049	GLOBAL ELECTRIC (USA)	USA	901	5AS	-	entfällt		AK27	leichtes Vierrad-Fz.	GLOBAL ELECTRIC MotorCarsLLC, 3601 7th Avenue NW, Fargo, ND 58102 (USA)	
e11	*92/61*	0050	GLOBAL ELECTRIC (USA)	USA	901	5AS	-	entfällt		AJ27	leichtes Vierrad-Fz.	GLOBAL ELECTRIC MotorCarsLLC, 3601 7th Avenue NW, Fargo, ND 58102 (USA)	
e11	2000/7	0062	GLOBAL ELECTRIC (USA)	USA		5AS	L6e	entfällt	EM	AG 28 (4-wheel)	GEM (610kg m. Fahrer)	GLOBAL ELECTRIC MotorCarsLLC, 3601 7th Avenue NW, Fargo, ND 58102 (USA)	General Electric Company
e11	*2000/7*	0061	GLOBAL ELECTRIC (USA)	USA	901	5AS	L6e	entfällt	Elektro	AG28	leichtes Vierrad-Fz.	GLOBAL ELECTRIC MotorCarsLLC, 3601 7th Avenue NW, Fargo, ND 58102 (USA)	General Electric
e01	*92/61*	0005	MSA		8746	-	L7e	entfällt	-	CSBUG1	SECMA (Klein-PKW)		
e03	*92/61*	0185	CMC		-	-	-		-	Gipsy			

Appendix A23: Project schedule

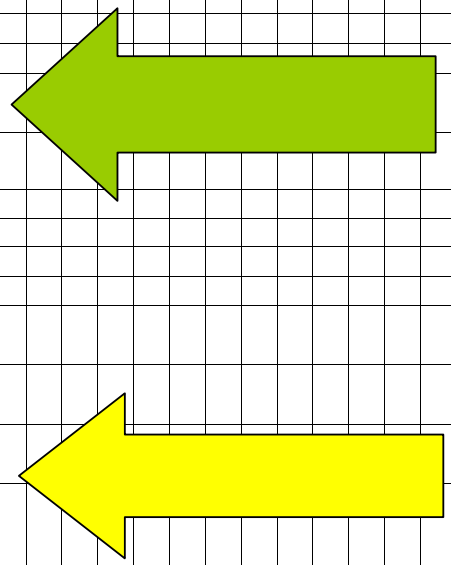
	week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
	CW	50	51	52	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Position	**Content (brief description)**																																	
2.1.1.1	Overview of the aims and the technical possibilities of manipulations	10 man-days																																
	Description of the possible effects																																	
	- vehicle classification according to 2002/24/EC																																	
	- limits braking system according to 93/14/EEC																																	
	- safety tyres according to chapter 1, 97/24/EC																																	
	- limits of the EMC directive chapter 8 of 97/24/EC																																	
	- noise emissions according to chapter 9 of 97/24/EC																																	
	- the need for / the scope of the technical inspections in chosen member states																																	
	- permitted driver licence vehicle classes																																	
	- road tax in chosen member states																																	
	- insurance cover in chosen member states																																	
	- accident rate in chosen member states																																	
2.1.1.2	Summary of the available products for the manipulation, assessment								8 man-days																									
2.1.1.3	Listing of the different technical possibilities against unauthorised manipulation	10 man-days																																
2.1.1.4	Description of the different systems against unauthorised manipulation																																	
2.1.1.5	Analysis of the different systems by a technical expert showing the strong and weak points of these anti manipulation systems													15 man-days																				
2.1.1.6	Outlook / development regarding the improvement of the anti manipulation measures													10 man-days																				

1. Interim Report **(15.04.2003)**

2. Interim Report **(15.07.2003)**

	week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
	CW	50	51	52	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2.2.1.1	Summary of all available products for the manipulation of 2 and 3 wheeled motor vehicles (see 2.1.1.2), quantitative assesment								10 man-days																									
2.2.1.2	Study on the number of vehicles in use which show signs of manipulation																	12 man-days																
2.2.1.3	Assessment of the efficiency of the existing regulations. Summary of the results found in chapter 2.2.1.1 and 2.2.1.2																																	
2.3.1.1	Analysis of the results in chapter 2.1 and 2.2																																	
2.3.1.2	List of recommendations for anti manipulation measures																																	
2.3.1.3	Assessment of the technical expenditure to implement the recommended anti manipulation measures																																	
2.3.1.4	Assessment of the effort required to overcome the recommended anti manipulation measures																																	
2.3.1.5	Additional recommendations according to other directives																																	
2.3.1.6	Table showing the recommended alterations based on the existing regulations																																	

	week	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
	CW	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
Position	**Content (brief description)**																			
2.1.1.1	Overview of the aims and the technical possibilities of manipulations																			
	Description of the possible effects																			
	- vehicle classification according to 2002/24/EC																			
	- limits braking system according to 93/14/EEC																			
	- safety tyres according to chapter 1, 97/24/EC																			
	- limits of the EMC directive chapter 8 of 97/24/EC																			
	- noise emissions according to chapter 9 of 97/24/EC																			
	- the need for / the scope of the technical inspections in chosen member states																			
	- permitted driver licence vehicle classes																			
	- road tax in chosen member states																			
	- insurance cover in chosen member states																			
	- accident rate in chosen member states																			
2.1.1.2	Summary of the available products for the manipulation, assessment																			
2.1.1.3	Listing of the different technical possibilities against unauthorised manipulation																			
2.1.1.4	Description of the different systems against unauthorised manipulation																			
2.1.1.5	Analysis of the different systems by a technical expert showing the strong and weak points of these anti manipulation systems																			
2.1.1.6	Outlook / development regarding the improvement of the anti manipulation measures																			



Appendix A23: Project schedule

	week	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
	CW	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
2.2.1.1	Summary of all available products for the manipulation of 2 and 3 wheeled motor vehicles (see 2.1.1.2), quantitative assesment																			
2.2.1.2	Study on the number of vehicles in use which show signs of manipulation												Draft Final							making final report
2.2.1.3	Assessment of the efficiency of the existing regulations. Summary of the results found in chapter 2.2.1.1 and 2.2.1.2	12 man-days																		
2.3.1.1	Analysis of the results in chapter 2.1 and 2.2						10 man-days													
2.3.1.2	List of recommendations for anti manipulation measures						12 man-days													
2.3.1.3	Assessment of the technical expenditure to implement the recommended anti manipulation measures												15 man-days							
2.3.1.4	Assessment of the effort required to overcome the recommended anti manipulation measures																			
2.3.1.5	Additional recommendations according to other directives						10 man-days													
2.3.1.6	Table showing the recommended alterations based on the existing regulations																4 man-days			

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